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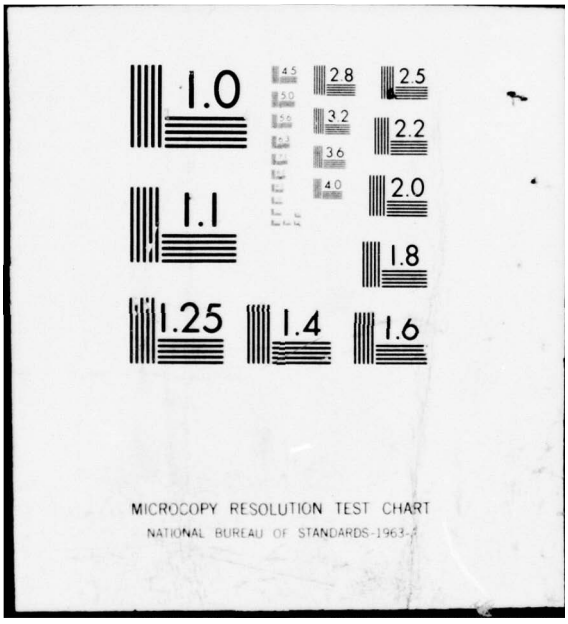
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IWR CONTRACT REPORT 76-2

TESTING AN ITERATIVE, OPEN PROCESS

FOR WATER RESOURCES PLANNING

A Report Submitted to:

U.S. Army Engineer Institute for Water Resources
Kingman Building
Fort Belvoir, Virginia 22060

Under

Contract No. DACW73-73-C-0046



By

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DECEMBER 1976

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The report describes the field test and evaluation of an iterative, open planning process (IOPP) in which traditional planning activities (e.g., formulation of alternatives, impact assesstment) are carried out concurrently, although with different degrees of emphasis over time. The process is opened to all affected interests by actively identifying and involving them at many stages of planning.

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The IOPP was used to formulate and evaluate alternative solutions to flooding problems in the San Pedro Creek, California river basin. In conjunction with Corps of Engineers, San Francisco District planners, the researchers designed a study procedure and participated in plan formulation and evaluation activities. The report describes the various problems encountered during the implementation of the IOPP technique and discusses means to avoid these problems and make the technique more efficient and effective.

At the time the research was initiated the IOPP was still experimental. However, a process similar to IOPP has recently been adopted by the Corps of Engineers, thus lending new significance to the study results and conclusions.

ACKNOWLEDGEMENTS

The research reported on herein consisted of an experiment undertaken in the context of an ongoing water resources planning study of the Corps of Engineers' San Francisco District. Because there were several hundred individuals who gave generously of their time and submitted graciously to lengthy interviews, it would be impractical to acknowledge them individually. We would be remiss however, if we did not record our gratitude to the following study participants: members of the interdisciplinary planning group formed of staff members of the San Francisco District, especially Bud Wheelis, Steven Lee and Robin Mooney; members of the San Pedro Creek Flood Abatement Citizen's Committee; members of the Pacifica, California City Council and City staff; and the numerous residents of Pacifica, who assisted us in evaluating the "iterative, open planning process" that was being tested.

We wish to acknowledge the many contributions received from our project monitors at the Institute for Water Resources: David Aggerholm (now with the Environmental Protection Agency), Randy Hanchey, and Dick McDonald. Thanks are also due to Bryan Jenkins and James Price, both of Stanford's Civil Engineering Department, for providing helpful comments on an earlier draft of this report.



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Chapter 1

INTRODUCTION

"Planning is not merely concerned with the efficient... [achievement] of goals; it is also a process by which society may discover its future."

John Friedman, Retracking America

The research reported on herein concerns the field testing and evaluation of the "Iterative, Open Planning Process" (IOPP), a process designed for use in Corps of Engineers water resources planning. The IOPP is an iterative process in which traditional planning activities (e.g., formulation of alternatives, impact analysis) are carried out concurrently, although with different degrees of emphasis over time. The process is opened to all affected interests by actively identifying and involving them at many stages of planning.

Given that the Corps of Engineers has been engaged in water resources planning and development since the early 1800's, it is reasonable to ask why the testing and evaluation of a planning process constitutes an important contemporary subject for research. The answer given below constitutes the motivation for the research discussed in this report.

MOTIVATION FOR RESEARCH

The Federal water resources "planning environment" has been changing at a significant rate since the late 1950's. Evidence of this change is given by the growing criticisms of benefit-cost analysis, the increased interest in involving publics in planning, and the increased emphasis on environmental and social concerns in planning. These changes in the planning environment have led to a number of new laws and regulations. Among the more important of these are: (1) the National Environmental Policy Act of 1969 (Public Law 91-190, commonly referred to as "NEPA"); (2) Section 122 of the River and Harbor and Flood Control Act of 1970 (Public Law 91-611); and (3) The Principles and Standards for Planning Water and Related Land Resources [U.S. Water Resources Council, 1973, hereinafter referred to as the "Principles and Standards"].

These new laws and regulations have led the Office of the Chief of Engineers (OCE) to issue new requirements for Corps water planning. For example, one OCE regulation [U.S. Army-OCE, 1974a] indicates the ways in which new requirements for environmental studies are to be

added on to the pre-NEPA planning process. Another [U.S. Army-OCE, 1972] governs how the environmental, social and economic studies required to meet Section 122 of Public Law 91-611 are to be incorporated into planning.*

There is a considerable degree of overlap in these new OCE regulations. The very existence of substantial overlap, together with the interdependencies between the aforementioned OCE regulations and the OCE guidance on public involvement in planning [U.S. Army-OCE, 1974b], suggests that efficiencies in planning might be gained by a more deliberate integration of the various new planning requirements. That is, instead of dealing with the new requirements one-by-one by adding on new "single purpose" procedures (e.g., "NEPA procedures", "Section 122 procedures"), it might be more efficient to examine, and possibly restructure, the entire planning process so that these new requirements can be dealt with in an integrated way. This integration of public involvement and the assessment of various environmental, social and economic impacts is one of the central characteristics of the IOPP.

The relevance of the IOPP to Corps planners is manifested by still another set of new OCE regulations, namely the regulations for implementing the Principles and Standards entitled "Planning Process: Multiobjective Planning Framework" [U.S. Army-OCE, 1975, hereinafter referred to as the "Corps planning process regulations"]. These regulations were influenced by an earlier version of the IOPP [Ortolano, 1973], and they contain many of the same concepts that characterize the IOPP. The close relationship between the IOPP and the planning process called for by the Corps planning process regulations is described below.

Aside from matters relating to the IOPP's potential utility in dealing efficiently with new planning requirements, this research on the IOPP is motivated by the need to facilitate decision making on the basis of the public interest. The elusive concept of the public interest has come to be considered as the very basis for Corps decision making [U.S. Army-OCE, 1972]. Yet there is no formula or quantitative procedure that can be invoked to assure that the actions recommended by the Corps are in "the best overall public interest". What is called for by this mandate for public interest decision making is a planning process that is open and that recognizes the compromise and negotiation inherent in reaching decisions on the basis of the public interest in a pluralistic society such as obtains in the United States. As argued by Ortolano [1975] the IOPP is designed to facilitate such public interest decision making.

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* These new OCE regulations and the ways in which they modified District level planning are discussed by Randolph and Ortolano [1975, Chapter 2].

THE NATURE OF THE IOPP

The IOPP is a process based on the concurrent (as opposed to sequential) performance of the four traditional planning tasks: problem identification, formulation of alternatives, impact assessment, and evaluation.* The process is flexible and calls for continued interaction between Corps planners and a wide range of interested publics and government agencies. The IOPP is, in many important respects, quite similar to the process called for in the Corps planning process regulations. In the discussion that follows, selected excerpts from these regulations are cited in the footnotes to indicate the similarity between these two processes.

Figure 1 serves to emphasize one of the fundamental characteristics of the IOPP, namely the explicit recognition of the interdependencies among all four planning tasks.** At any point in the process, information from each of the four planning tasks is integrated with information from other tasks. For example, as impacts are assessed, they may reveal new concerns of affected publics. Thus the information from the impact assessment task "feeds back" to the problem identification task.

An important part of the information that links the four tasks together is the goals, concerns, constraints, etc. that various decision makers and affected publics consider important in ranking alternative actions. As a matter of convenience, the term "evaluative factors" is used to refer to these goals, concerns, constraints, etc.

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* In other descriptions of the IOPP (e.g., Ortolano [1974] and Wagner [1975]) the term "activities" has been used for "tasks", the phrase "identification of concerns" for "problem identification", the phrase "impact analysis" for "impact assessment", and the term "plan ranking" for "evaluation". Although we prefer the former terms and phrases, we have used the latter herein in order to make the terminology of this report consistent with that of the Corps planning process regulations [U.S. Army-OCE, 1975].

** The Corps planning process regulations [U.S. Army-OCF 1975, p. 8] are similar inasmuch as they indicate the following: "While emphasis may be on a particular activity [i.e., a portion of a planning task] at a given point in the process, successful accomplishment of each task, as well as the planning process in general, requires continuous integration of all activities".

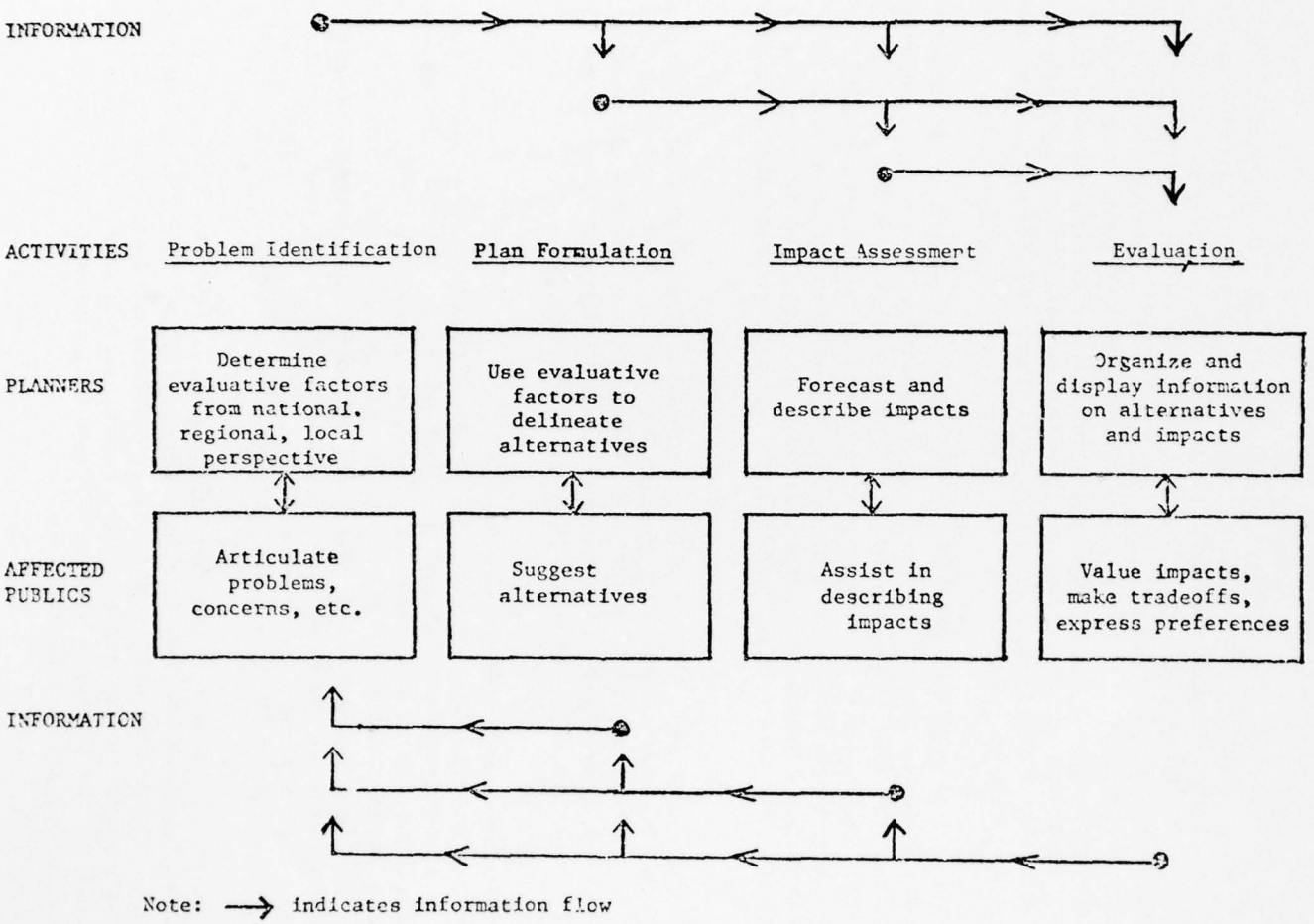


Figure 1. Information Flow During Any Stage of the IOPP

Figure 1 also represents the nature of the relationship between planners and publics. The IOPP calls for open and continued interaction with publics, wherein public "input" is used to guide other study activities,* and publics are made aware of how their contributions to planning have been used. The IOPP recognizes the public involvement as providing a key source of evaluative factors and an important part of the process of developing priorities among such factors.

Figure 2 represents another basic concept of the IOPP: each of the four planning tasks is conducted a number of times at increasing levels of detail as the study progresses over time. However, at any one time, one activity may receive more emphasis than the others. Although the figure shows four stages of the four planning tasks, the distinction between stages is arbitrary. Thus, there is nothing sacred about four stages nor is the number of stages necessarily "fixed" for all studies. The number of stages and iterations may vary depending on the type of the study (e.g., "continuing authority" vs. survey investigation, geographical scope of the study, location of the study and many other factors.)**

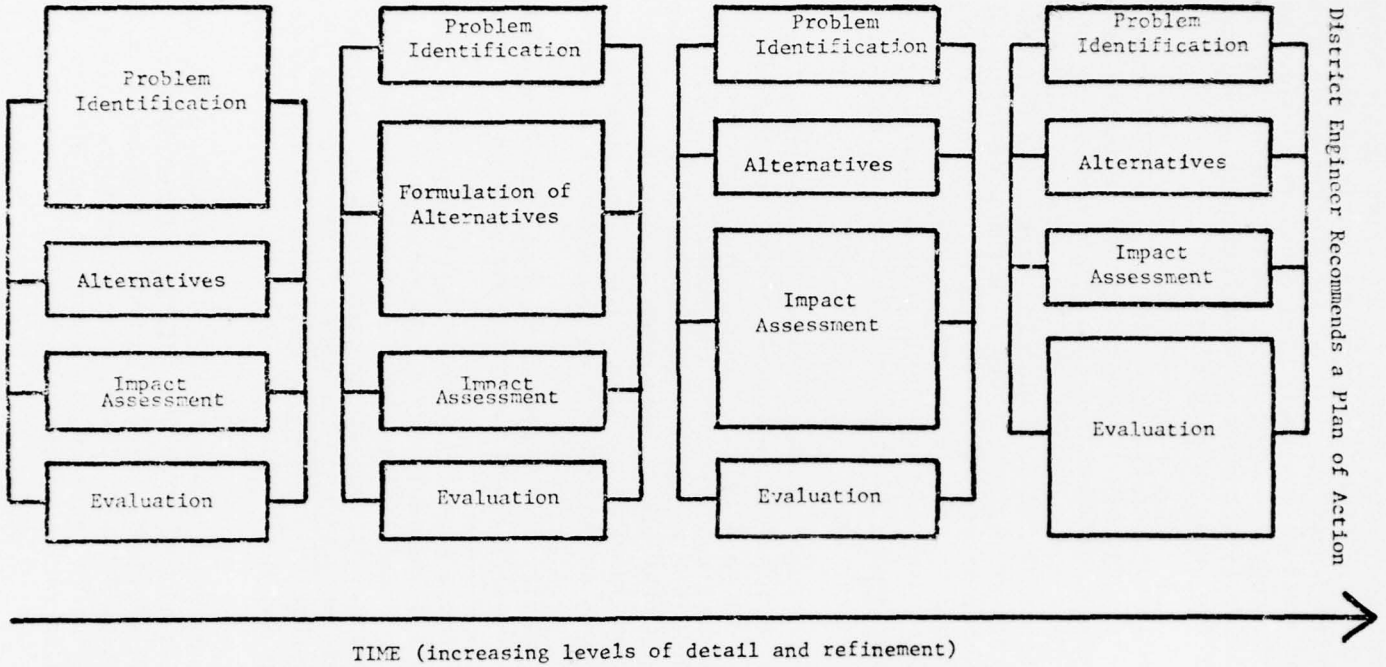
It is worth emphasizing that the IOPP is, by definition, an iterative process. All four planning tasks are carried out concurrently and are repeated as the process unfolds. These iterations allow for the efficient use of planning resources and the continual clarification of study priorities. The IOPP recognizes the impossibility of generating all of the information that might conceivably be useful in decision making, and it uses new information from planners and publics to influence study directions and priorities as the planning is carried out.

The IOPP relies heavily on the notion of open communication between District planners (typically study managers) and publics and between

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* On this point, the Corps planning process regulations [U.S. Army-OCE, 1975, p. 8] note that: "An early and active program of public involvement is essential to successful institutional analysis and ultimately, to plan implementation. Appropriate organizations and agencies and other publics should be active participants in the planning process early in Stage 1 rather than viewed as outsiders who must subsequently be convinced of the worth of a plan and its implementation" [emphasis added].

** The Corps planning process regulations [U.S. Army-OCE, 1975, pp. 6, 14 and 15] suggest a process with the following three stages: (1) Development of a Plan of Study, (2) Development of Intermediate Plans, and (3) Development of Detailed Plans. The regulations indicate that each of the four planning tasks is to be carried out at each stage, with more than one iteration conceivable in each of the stages.



Notes: (a) The lines between boxes summarize information flows noted in Figure 1.

(b) The sizes of the various boxes suggest the emphasis placed on the four tasks at any one point in the process.

(c) The figure does not show all possible variations in the way emphasis on activities may shift over time.

Figure 2. A Representation of the IOPP Over Time

District planners and technical specialists both inside and outside of the Corps. Regarding the interactions between District planners and publics, the IOPP requires planners to take on three different but related roles: coordinator/catalyst, technical advisor and facilitator.

The coordinator/catalyst role requires planners actively to search out and attempt to involve all the potentially affected interests in a particular study, including those who may be reluctant to participate [Bishop, 1969]. This may require using a wide variety of public involvement techniques, some of which have not been used extensively in the past.* The technical advisor role requires planners to identify, and bring to the attention of publics, those issues which publics may neither appreciate nor recognize at any point in the planning process. The technical advisor role also requires that planners sift through the multitude of study demands made by publics, decide which are worthy of investigation (using public input as a guide) and then translate those study demands into well defined study tasks for Corps technical people or outside specialists to accomplish. The facilitator role requires that planners help publics clarify their own perceptions of water-related problems and formulate their own positions regarding alternatives and impacts.

The IOPP also envisions District planners as playing key roles in communicating with technical specialists both inside and outside of the Corps. As regards those technical specialists within the Corps, the IOPP relies heavily on continual coordination and communication among those involved in each of the four planning tasks throughout the duration of a study. This is necessary if all four planning tasks are to be carried out concurrently. One way to accomplish this type of coordination is through the use of an interdisciplinary planning group. Indeed, this approach is called for by the Corps planning process regulations.**

In addition to timely coordination among technical specialists within the Corps, the IOPP also requires that District planners coordinate

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* An analysis of new public involvement techniques, including an evaluation of their potential utility in federal water resources planning, is given by Wagner and Ortolano [1975a].

** The Corps planning process regulations [U.S. Army-OCE, 1975, p. 5] indicate that: "The interdisciplinary team approach will be utilized throughout a study with all participants having equal opportunity to be involved. This requirement does not mean that all participants must be involved in each activity, task or stage, only that they must be involved when their skills could have a material effect on study progress and output".

with professionals in other government agencies at the earliest convenient time in the planning process. The IOPP's emphasis on early substantive interagency coordination is based on the assumption that it is useful to gain some insights into other agencies' concerns (e.g., fish and wildlife) early in the planning process so that these concerns can be used in formulating alternatives and in guiding the analysis of impacts.

These various communication and coordination functions, as well as each of the four planning tasks per se, involve numerous activities. Like the various stages of IOPP, these activities are not rigidly defined; they vary with the individual circumstances associated with a particular study. These activities are discussed further in Chapter 2 in the context of a specific Corps of Engineers planning study.

RESEARCH OBJECTIVES AND APPROACH

In order to clarify and explore the potential utility of the IOPP for Corps water resources planning, it was decided to conduct a "field test" with the following three research objectives:

1. To implement the IOPP on an ongoing Corps study and thereby make operational the general concepts that characterize the IOPP.

2. To evaluate, as objectively as possible, the activities used in implementing the IOPP from the perspective of various planners and publics involved in the field test.

3. To assess the feasibility and utility of the IOPP in future Corps studies based on the results of the activities associated with the first two objectives.

When this research was initiated in 1973, the field test was viewed as an examination of the IOPP as an approach to planning which the Corps of Engineers might employ. In 1975, after the Office of the Chief of Engineers adopted a process similar to the IOPP [U.S. Army-OCE, 1975], the field test took on a new significance. In the post-1975 context, the field test provided an opportunity to identify problems in implementing the Corps' newly adopted planning process and, more generally, to identify the strengths and weaknesses of this process.

Selection of Study for the Field Test

The decision regarding which Corps study to use in field testing the IOPP was made on the basis of the following criteria:

1. The study should be small enough to be manageable but large enough to reflect many of the problems and issues encountered in a typical Corps water resources study.

2. The time frame of the study should be on the order of two years.

3. The study area should be within a reasonable distance of Stanford University.

4. The Corps District in charge of the study must be willing to experiment with implementation of the IOPP and be willing to accept the "risks" involved in letting "outsiders" do research on an ongoing study.

The San Pedro Creek (SPC) flood control study, a "continuing authority study" being carried out by the San Francisco District (occasionally referred to hereinafter as either SFD or "the District") and authorized by Section 205 of the Flood Control Act of 1948 (Public Law 858), appeared to meet most of the above criteria.* The San Pedro Creek basin has an area of 7.2 square miles and is located in Pacifica, California. The San Francisco District's detailed study was initiated in response to a request by the Pacifica City Council** to solve the periodic flooding of the lower reaches of the watershed and after a reconnaissance report [U.S. Army-SFD, 1973] indicated that an "economically feasible" project could be developed.

During the summer and fall of 1973 a series of meetings was held involving representatives of the U.S. Army Engineer Institute for Water Resources (the contracting agency for this research), the Department

* The authorization under Section 205 of Public Law 858 was designed to expedite the development of small projects. It limits the Federal financial commitment to a total of $1,000,000, of which $155,000 was allocated for the planning and design of a project on San Pedro Creek.

** Paficica City Council Resolution No. 15-73, January 22, 1973.

of Civil Engineering of Stanford University, and the San Francisco District. Following these meetings, the San Francisco District agreed that its study of San Pedro Creek could be used for purposes of testing the IOPP. A "Research Team" composed of representatives from Stanford University and the Institute for Water Resources was subsequently formed to work with the District planners in implementing the IOPP on the SPC study.

Overall Approach

To meet the first of the research objectives, implementation of the IOPP, the Research Team proposed numerous methods and activities for use in the San Pedro Creek study. The means for implementing the IOPP are not unique; the following choices were made among the many possible activities which could have been undertaken. A public involvement program was designed using a local citizens committee, a public workshop, and two citizen information bulletins and questionnaires to make the planning process as open as possible. An interdisciplinary planning group of San Francisco District personnel was organized to assist in the conduct of the SPC study and to explore the potential use of interdisciplinary planning in Corps studies. The activities relating to both public involvement and the interdisciplinary planning group were iterative in the sense that they involved the concurrent consideration of all four planning tasks from the very beginning of the study. In addition to the above mentioned activities, a special effort was made to carry out substantive interagency coordination during the earliest stages of the study. The activities undertaken to implement the IOPP on the San Pedro Creek study are discussed in Chapter 2.

To accomplish the second research objective, evaluation of the activities used in implementing the IOPP, personal interviews were conducted with eighty participants in the SPC study. These participants included the following: San Francisco District personnel; South Pacific Division personnel; personnel from other government agencies; members of the Citizens Committee and the Pacifica City Council; "active publics", i.e., those publics who participated in the study; and "inactive publics", i.e., those publics who were contacted during the study but chose not to participate. In addition, telephone interviews were conducted with 243 people who received the first citizen information bulleting but did not respond to the questionnaire included with it. The various interviews explored the participants' attitudes and reactions toward the study activities and the basis for those attitudes. The results from these interviews are presented in Chapter 3.*

The third objective, the assessment of the feasibility and utility of the IOPP in future Corps studies, was accomplished on the basis of

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* The interviews also provided much detailed information on the reactions of citizens and planners to various public involvement techniques used in the SPC study (e.g., reactions to the length and format of the citizen information bulletins). This technique-related information is given by Wagner [1975].

information obtained from the various interviews supplemented with the Research Team's observations regarding the conduct of the IOPP implementation activities. Various aspects of this overall assessment of the IOPP are contained in Chatper 4.

CHAPTER 2

IMPLEMENTING THE IOPP: THE SAN PEDRO CREEK STUDY

"One must learn by doing a thing, for though you think you know it -- you have no certainty, until you try."

Sophocles, 400 B.C.

This chapter focuses on the activities utilized to implement the IOPP in the context of the San Pedro Creek study. The discussion covers the period from the initiation of the District's study (September 1973) to the point at which both the District and the City of Pacifica had reached tentative agreement on a preliminary conception of a proposed project (June 1975).

The emphasis of this discussion is on the approaches and techniques used in implementing the IOPP and not on the details of the San Francisco District's SPC study per se; details of the SPC study are generally given only to illustrate an IOPP concept or to demonstrate an important aspect of the implementation of the IOPP. Figure 3, a map of the San Pedro Creek drainage basin, is presented for general information purposes and will be referred to occassionally in the discussion.

IOPP IMPLEMENTATION ACTIVITIES

Two considerations played a principal role in guiding the design of the IOPP implementation activities. One concerned the need to keep the channels of two-way communication between planners and affected publics open throughout the SPC study. The second concerned the need to continually integrate information from all four planning tasks. There are many ways in which planning activities can be organized to meet these needs. An overview of the particular activities used as part of the SPC field test is given below.

Public Involvement Activities

The approach used to keep the SPC study open had three components. One component involved a citizens committee (hereinafter referred to as the "CITCOM") which provided a convenient mechanism for obtaining frequent interaction with "representatives" of local affected publics. The second component involved the use of citizen information bulletins which contained questionnaires to allow substantial numbers of interested publics and government agencies to provide input into the study. The third component involved the use of public meetings and workshops which complemented the written information flows associated with the bulletins and questionnaires.

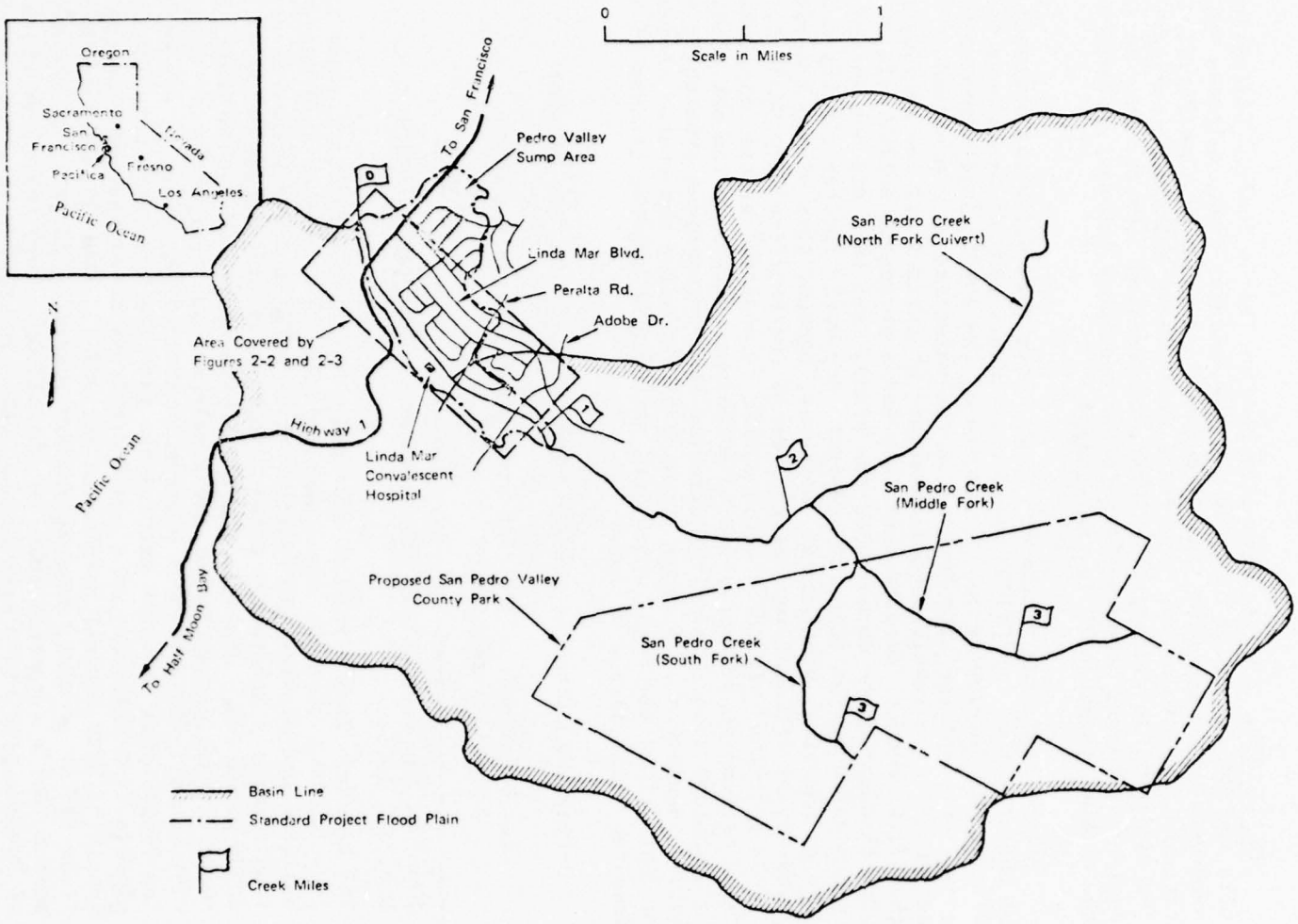


Figure 3. San Pedro Creek (SPC) Pacifica, California - General Map of Basin

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The CITCOM. The Pacifica City Manager, after initial discussions with the San Francisco District and the Research Team, selected (with subsequent Pacifica City Council approval) a group of five Pacifica citizens to serve on the "San Pedro Creek Flood Abatement Committee". The citizens, in principle at least, represented "the business interests, ecology interest, homeowner's interest and labor interest as well as the community interest" in the study.*

At the beginning of the SPC study there were differing perceptions of the role that the CITCOM would play (e.g., provide assistance to the District in developing other elements of the public involvement program, represent the City Council in the selection of a proposed action).** As a result of deliberations at their first few meetings, the CITCOM members decided that they had a permanent active role to play throughout the duration of the study, that they did not intend to be dominated by the District and that they would further clarify their role as the study progressed. Moreover, because they viewed themselves primarily as official representatives of the Pacifica City Council, the CITCOM felt that all their actions must be approved by the City Council; this position subsequently led to occasional delays in the SPC study. The problems associated with differing role perceptions eventually resolved themselves as a mutual trust evolved during the course of subsequent CITCOM meetings, which were attended by representatives of the Research Team and the District.

During the course of the San Pedro Creek Study, the CITCOM:

1. Provided the District with their perceptions of the problems associated with SPC.

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* Minutes, San Pedro Creek Flood Abatement Committee, Pacifica, CA., Dec. 13, 1973.

** The Research Team's initial conception for the CITCOM's role was that it would help with the development of the first citizen information bulletin and provide information on the attitudes and values of various community interests; other CITCOM activities would evolve as the study proceeded. However, the CITCOM was appointed without being made aware of this conception of their role and was charged by the Pacifica City Council "to develop a program to control the storm waters within San Pedro Creek" and "to participate with the U.S. Army Corps of Engineers in development of a San Pedro Creek flood abatement program." (Pacifica City Council Resolution No. 221-73, Nov. 26, 1973.) At the first CITCOM meeting, several members reacted negatively to the Research Team's suggested role for the CITCOM. They feared being used as "guinea pigs" in a test of the IOPP. The CITCOM thus devoted their second meeting to the subject of their own role in the SPC study.

2. Assisted in the preparation of citizen information bulletins and questionnaires by commenting on draft versions of these documents.

3. Conducted a public workshop to gain an appreciation of the concerns of other Pacifica residents regarding San Pedro Creek.

4. Reacted to information which the District presented on alternatives and their impacts.

5. Recommended to the Pacifica City Council two of the several alternatives under consideration by the District.

Citizen Information Bulletins and Questionnaires. The Research Team conceived of and designed two citizen information bulletins and their associated questionnaires as vehicles for providing information to the public on the status of the study, soliciting information from a broad cross section of the community, and obtaining feedback from various public agencies and private organizations. The first citizen information bulletin (prepared in February 1974 and hereinafter referred to as the CIB1) presented information, however preliminary, on all four planning tasks.* This was done in recognition of the interdependencies between tasks (see Figure 1 above).

The CIB1 was distributed to nearly all of the 700 or so floodplain and creekside residents, a random sample of 450 other Pacifica residents, various community organizations, and local agency representatives that might have had an interest in SPC.** Because only 6 1/2 percent of those receiving the CIB1 completed and returned copies of the CIB1 questionnaire, a telephone survey of 234 non-respondents was conducted. This survey led to an overall (i.e., post-survey) response rate of

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* The CIB1 and its associated questionnaire are given in Wagner [1975, Appendix A]. An analysis of the results from the questionnaire which accompanied the CIB1 is contained in an unpublished report by Wagner and Ortolano [1974a].

** To facilitate the distribution of the CIB1 questionnaire and other study related information, a computer program utilizing a software package known as "Qwick Qwery" was developed. This program had the ability to sort and update mailing list information and print mailing labels. The "Qwick Qwery" package was selected because it was available to all Corps Districts. A detailed discussion of the computer program is given by Prentice and Wagner [1974].

nearly 10 percent and provided much information concerning the non-respondents' reactions to the prose style and format, etc. of the CIB1 and questionnaire.*

In the interest of maintaining a two-way flow of information, a summary of the results from the CIB1 questionnaire and an indication of how the District would use these results were presented in a two page summary report.** This report was sent to all people on the original mailing list except for those contacted in the telephone follow-up survey who indicated that they had no further interest in the study.

Whereas the CIB1 was used in the early stages of the study, a second citizen information bulletin (prepared in March 1975 and hereinafter referred to as the CIB2) was used after the study had progressed to a point where specific alternatives and their impacts were identified in a preliminary way. As in the case of the CIB1, the CIB2 also presented information on all four planning tasks. The emphasis, however, was on alternatives and their impacts. The questionnaire associated with the CIB2 solicited feedback that could assist the District in gauging the extent of respondents' preferences for different alternatives.***

Public Meetings. Between September 1973 and June 1975 there were three public meetings held concerning the District's SPC study. Two of these were held in 1975 and were sponsored by the Pacifica City Council;****the Research Team had little to do with the design or conduct

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* A detailed account of the results from the telephone follow-up survey is given in an unpublished report by Wagner and Ortolano [1974b]; a summary of these results is given by Wagner [1975].

** This summary report is given in Wagner [1975, Appendix D].

*** In an effort to obtain a higher rate of response to the CIB2 questionnaire than was obtained for the CIB1 questionnaire, two special efforts were made. One involved the use of a newspaper format and careful attention to graphic layout, art work, prose style, etc. The second involved the use of a system of hand-delivery and pick up of the CIB2 questionnaire. These special efforts contributed to the improved response rate obtained in connection with the CIB2 questionnaire (as compared to the CIB1 questionnaire). A discussion of the CIB2 and the associated questionnaire is given in Wagner [1975, Appendix E]. An analysis of the results from the CIB2 questionnaire is contained in an unpublished report by Wagner and Ortolano [1975b].

**** These include a formal City Council meeting (February 22, 1975) and a City Council "study session" (June 4, 1975). The study session was an informal public meeting sponsored by the City Council.

of these two meetings. The other meeting, a public "workshop" held in March 1974, was sponsored by the CITCOM and was an integral part of the IOPP implementation effort. As part of the preparation for the CITCOM's public workshop the Research Team arranged for a special seminar at which CITCOM members were exposed to communication skills relevant to running a workshop. The seminar, which was conducted by SYNERGY Consultation Services, familiarized CITCOM members with some practical communication concepts and otherwise helped prepare them for their roles in conducting the public workshop.*

To provide background information for those attending the public workshop, the CIB1 was distributed with the notice announcing the workshop. Like the CIB1, the CITCOM's public workshop dealt with all four planning tasks. The workshop provided those attending with an opportunity to discuss: problems related to San Pedro Creek; evaluative factors to be considered in ranking various alternatives; and possible alternative actions and potential impacts which should be studied in detail. In addition, the workshop provided publics with an opportunity to make requests for specific types of information.

Interdisciplinary Planning Group Activities

As noted in Chapter 1, the IOPP calls for the continual integration of information from all four planning tasks throughout a study. To accomplish this integration, the District personnel affiliated with the SPC study were organized into an "interdisciplinary planning group" during the fall of 1973.** The study manager served as the group leader; other members of the group included representatives from the Hydraulics and Hydrology and Economics Sections (all from the Planning Branch) and representatives from the Environmental Branch and Design Branch.*** In the summer of 1974 an assistant study manager was appointed to aid the study manager in conducting the SPC study; he then became part of the planning group. (As a matter of convenience, the term "study managers" is used herein to refer to the study manager and his assistant.) An

* SYNERGY Consultation Services, Cupertino, CA is a consulting firm specializing in helping government agencies to develop public involvement programs. Communications techniques used at both the "SYNERGY seminar" and the public workshop are discussed by Wagner [1975].

** The SPC interdisciplinary planning group provided an opportunity to examine the feasibility and utility of using such groups in Corps Districts. This is especially noteworthy since the Corps planning process regulations [U.S. Army-OCE, 1975, p. 5] call for the use of such groups.

*** Representatives of the Research Team participated in the meetings of the interdisciplinary planning group.

attempt was made to manage the planning group's activities so that coordination among group members would take the form of direct and open interaction throughout the study.

One of the group's first activities was a meeting with representatives from Pacifica's city government staff, who presented information on the flooding problems along with other pertinent information on past studies, city policies, local attempts to resolve the flooding, etc. City representatives then led the planning group on a tour throughout most of the watershed pointing out various problem areas, showing examples of local efforts to solve various flood related problems and answering specific questions.

The planning group subsequently met on three or four occasions in the winter of 1973 to discuss the problems and needs of the study area. The preliminary findings of the Research Team were used to stimulate the group's thinking. In addition, the group reviewed various drafts of the CIB1. These early activities of the planning group were carefully coordinated with the early activities of the CITCOM. This was accomplished by the study manager and a representative of the Research Team, both of whom attended the meetings of the CITCOM and the planning group.

Later in the study (during the summer and fall of 1974) the interdisciplinary planning group met several times for purposes of "brainstorming" to formulate specific alternatives for more detailed investigation. These brainstorming sessions resulted in the identification of a wide range of alternative actions.*

During November 1974 the interdisciplinary group met with representatives from the U.S. Fish and Wildlife Service and the California Department of Fish and Game. After learning of the features of the various alternatives discussed to date, the fish and wildlife representatives indicated their concerns (which included the need to seriously consider "non-structural" actions); they also ranked the alternatives which the planning group was considering in order of decreasing impact on the Creek's fish and wildlife resources. Following the November 1974 meeting, the planning group met only occasionally to accomplish routine coordination of various special studies being carried out by individual group members.

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* This point is discussed more fully below in the section on "Formulation of Alternatives."

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* This point is discussed more fully below in the section on "Formulation of Alternatives".

STAGES OF THE SPC FIELD TEST

Although the IOPP calls for the consideration of all four planning tasks from the outset of a study, it recognizes that one or two tasks may receive special emphasis at any point or stage in the study. Three such stages can be distinguished in the SPC field test; they are indicated in Table 1 which provides a record of the timing of key IOPP implementation activities.

The first stage includes the period between the initiation of the study (September 1973) and the CITCOM's public workshop (March 1974); the problem identification task received emphasis during this period. This emphasis was reflected in the CIB1 and the CITCOM's public workshop, both of which focused on the articulation of evaluative factors.* The CIB1, for example, contained the evaluative factors which the Research Team and the District planners felt would be important. The feedback provided by the returned CIB1 questionnaires and the comments at the CITCOM's public workshop indicated which factors various local publics considered important. This feedback also allowed the Research Team to develop a preliminary ranking of evaluative factors [Wagner and Ortolano, 1974a]. Note that although the CIB1 and the CITCOM's public workshop focused on the identification of evaluative factors, they considered other planning tasks as well. The CIB1 for example, contained a general discussion of the types of actions that could be used to reduce flood damages in the SPC basin and the types of impacts that would be associated with such actions.

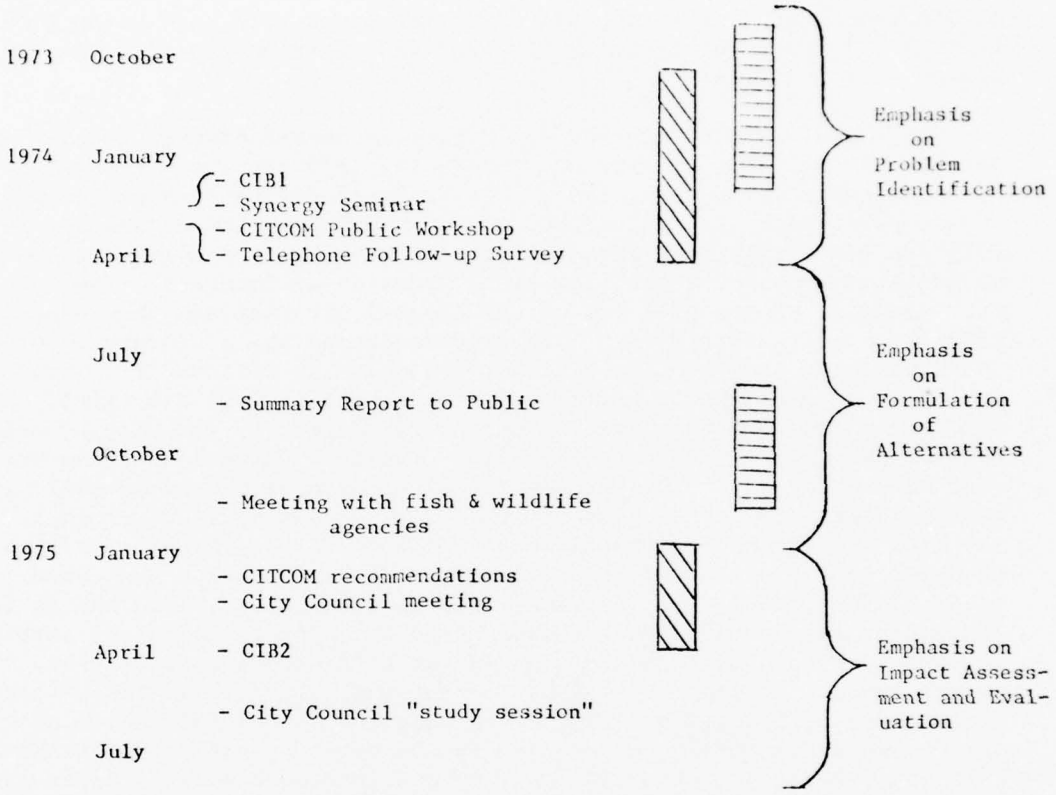
The second stage of the SPC field test is represented by the time period after the CITCOM's public workshop in March 1974 and before the CITCOM's meeting of January 15, 1975. The principal study efforts during this period concerned the formulation of alternatives; these efforts were carried out by the study managers (and their supervisors within the Planning Branch) and various other members of the interdisciplinary planning group. Problem identification activities during this period took the form of a detailed analysis of the completed CIB1 questionnaires and hydrologic studies which more carefully delineated the flooding problem. Impact assessment and evaluation (i.e., plan ranking) were carried out at the November 1974 meeting with the fish and wildlife agency representatives; they were also carried out by the study managers in their preparation of a preliminary (economic) benefit-cost analysis in December 1974. In addition, impact assessment and evaluation were carried

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* Recall from Chapter 1 that "evaluative factors" represent the goals, concerns, constraints, etc. that various study participants consider important in ranking alternative actions.

Table 1

Chronology of Key IOPP
Implementation Activities



out by the study managers in their preparation of a preliminary (economic) benefit-cost analysis in December 1974. In addition, impact assessment and evaluation were carried out in the form of decisions regarding which alternatives to study in detail; these decisions were made using professional judgements regarding the expected costs and benefits of the various alternatives.

The third stage of the SPC field test is represented by the period between the CITCOM's meeting of January 15, 1975 and the City Council's "study session" of June 4, 1975. The emphasis during this period was on impact assessment and evaluation. The CITCOM's meeting of January 15, 1975 was especially significant. At that meeting, the CITCOM (encouraged by the study manager's call for an "expression of interest" from the City Council) recommended two of the several alternatives then under consideration by the District. This recommendation was premature insofar as it was made prior to the District's assessment of impacts (except for the economic impacts summarized in the benefit-cost analysis). The CITCOM's recommendations were subsequently adopted by the City Council at their meeting of February 22, 1975. The City Council's action was also made prior to the District's formal assessment of non-economic impacts. Formal impact assessment studies were eventually reported in the CIB2 and the environmental working paper* [U.S. Army-SFD, 1975], both of which were distributed in April 1975. The information generated after the City Council's recommendation on February 22, 1975 had an influence on all four planning tasks. Problem identification was further refined by responses to a question in the CIB2 questionnaires that called for the ranking of evaluative factors. The formulation of alternatives was influenced by information that led to a modification of one of the two alternatives recommended by the City Council. Impact assessment was reflected in the CIB2 and the environmental working paper and the feedback received on these documents. Evaluation was influenced by the information from the State Department of Transportation (CALTRANS) that indicated the infeasibility of one of the alternatives recommended by the City Council. Following the City Council study session of June 4, 1975, the District, the CITCOM and the City Council agreed on the desirability of conducting more detailed studies on a single alternative action. This action was among the two recommended by the CITCOM on January 15, 1975 with modifications provided in response to impact assessment information subsequently generated by the District, the CITCOM and the CIB2 questionnaire respondents.

* The environmental working paper is a document which is used by SFD to report on the environmental impacts of alternatives before the District selects a particular alternative. A discussion of the environmental working paper concept as used by both the Sacramento and San Francisco Districts is given in Randolph and Ortolano [1975].

The remainder of this chapter provides a more detailed account of how the IOPP implementation activities outlined in the previous section contributed to each of the four planning tasks.

PROBLEM IDENTIFICATION

As elaborated elsewhere [Ortolano, 1974; Wagner, 1975], the IOPP envisions the problem identification task in terms of the articulation and ranking of evaluative factors. The sources of such factors can be conveniently organized into the following three categories: local publics whose concerns are solicited directly either through oral or written communications, or through local institutions; non-local publics whose concerns are expressed indirectly through institutions; and professional planners and technical specialists whose judgements are important in translating public concerns into technical constraints or identifying areas of concern unknown to various publics. In the SPC field test, the concerns of local publics were obtained via the public involvement activities, the concerns of non-local publics were elicited by coordination with interested agencies, and the perspectives of technical specialists were provided largely by the Research Team, the study managers and other members of the interdisciplinary planning group.

Public Involvement Activities

The concerns of local publics were obtained largely as a result of the CITCOM's activities and through the use of the questionnaires associated with the citizen information bulletins. The CITCOM per se provided a continuing source of information on evaluative factors, and their views were supplemented as a result of the public workshop which they conducted. However, the most broadly based source of information on local concerns were the questionnaires associated with the citizen information bulletins.

The CIB1 described four water related problems in the San Pedro Creek basin: flooding, fish obstruction, water supply and erosion. Roughly seventy-five percent of the 114 CIB1 questionnaire respondents agreed with the discussion of problems and needs in the CIB1. In addition, many people suggested issues which supplemented the District's initial perceptions of the problems.*

* For example, a number of respondents mentioned "urban debris" in the SPC as being among their principal concerns. Others mentioned concern over the sanitary or storm sewers that discharge into the Creek causing water pollution and contributing to fish kills.

In an effort to gain information on the ranking of evaluative factors, the questionnaires associated with both citizen information bulletins contained the following question:

> Based on your current knowledge of the problems and the things you value, indicate how important each concern [evaluative factor] is to you by placing a check in the appropriate column [three columns were provided: extremely important, moderately important, and slightly important].

Following the question was a list of a dozen or so concerns that the District felt were among the key evaluative factors. The question also invited respondents to add concerns which they felt were important and were not on the list.

Based on the analysis of public responses to the CIB1 [Wagner and Ortolano, 1974a], the District decided to give careful attention to the following factors in subsequent study activities, especially in the formulation of alternatives: steelhead fishery resources, visual character of the Creek, value of floodplain and creekside property, and costs to the local community.

The analysis of the responses to the above noted question on the CIB2 questionnaire [Wagner and Ortolano, 1975b] showed some modest shifts in comparison with results from the CIB1 questionnaire.* Some shifts in the public's ranking of evaluative factors are to be expected, since values and concerns are clarified as a study progresses and more information is presented.

Initial Coordination Activities

Evaluative factors associated with non-local publics are usually expressed "institutionally at the national, state, regional levels in laws, pending legislation, policies, regulations, programs, etc." [Ortolano, 1974, p. 771]. In the SPC study, it was decided to try to coordinate with Federal agencies as early as possible, using informal, verbal communications as opposed to the traditional practice of formal, written communications. The Research Team's discussions with the District planners coupled with a review of relevant literature served to identify Federal agencies, programs, policies and regulations dealing with various water problems relevant to SPC. This review identified agencies that might have an interest in the study. Representatives from these various agencies were contacted either personally or through

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* For example, the results from the second questionnaire showed more importance being placed on "monetary costs to the local community".

written communications. Wherever possible, informal personal contact was made rather than formal written communication which requires time consuming passage through hierarchical chains of command. Many valuable preliminary insights were obtained in this way.

The so-called "Verstehen technique"* was employed to identify other people, organizations, etc. that might have an interest in the San Pedro Creek study. This technique proved invaluable in identifying some institutional interests which probably would not have been identified until late in the study. For example, informal contacts with the California Coastal Commission indicated that any District project would be subject to their permit approval process since construction would be required within 1000 yards of the mean high tide line. Copies of their permit applications were obtained; these gave some indications of areas of concern to the Commission.

Although these informal methods of collecting preliminary information regarding the concerns of other agencies seem self evident, they have not been employed extensively in the past by planners in the San Francisco District. There are probably several reasons for this, a few of which are that: (1) regulations covering interagency communications require the use of formal chains of command, and (2) some planners feel that other agencies will not provide substantive information until a specific alternative is proposed. The thoughtful responses to the Research Team's informal inquiries, and the agency responses to the CIB1 questionnaire indicate a willingness, at least among some agencies, to provide substantive information early in the planning process.

Illustrations of the type of information that government agencies provided in response to early informal inquirires and the CIB1 questionnaire are given below. Both the California Fish and Game Department and the U.S. Fish and Wildlife Service stressed the importance of SPC as a spawning and nursery habitat. They both indicated which types of alternatives they would support and which they would oppose due to the adverse impact on the steelhead. The California Fish and Game Department's local representative also identified a sewer pipe crossing at the mouth of SPC which served as a hydraulic control on the SPC flood flows; District planners were unaware of this situation prior to

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* The Verstehen technique involves initially identifying a few key people (influentials who will definitely play a key role in a particular study) and asking them to identify other people, organizations, etc. who should be contacted. The process is repeated at each level of contact and eventually all key contacts are usually identified. See Borton et al. [1970, p. 84] for a more complete description of this technique.

this contact. CALTRANS noted their future plans for upgrading Highway 1 and indicated that any District project on SPC would have to be compatible with these plans.

Interdisciplinary Planning Group Activities

Under routine circumstances, the concerns of professional planners and technical specialists would be expected to arise in the context of the activities of an interdisciplinary planning group. However, the existence of a Research Team that was field testing the IOPP placed the SPC study outside of what could reasonably be considered a routine planning effort.

The Research Team, functioning as a group of engineer-planners, identified many of the relevant technical concerns prior to the meetings of the interdisciplinary planning group. Because many of the key evaluative factors had been identified prior to their meetings, the interdisciplinary planning group did not identify any new evaluative factors.

FORMULATION OF ALTERNATIVES

The process of formulating alternatives was carried out in the following iterative manner.* In the fall of 1973 several key evaluative factors were identified in general terms (e.g., reduction of flood damages, preservation of the Creek's steelhead fishery resources). Then various alternatives and their impacts were sketched in very general terms and reported in the CIB1 and at the CITCOM's public workshop in March 1974. These alternative actions were conceived of in terms of subsets of the key evaluative factors identified up to that point in the process. For example, channel modifications were considered for purposes of reducing flood damages; but they might interfere with the Creek as a habitat for steelhead. On the other hand, flood insurance provided an alternative that would compensate residents for flood damages while not interfering with the steelhead habitat; but flood insurance would not reduce the frequency of flooding.

After receiving early feedback from various affected publics and other agencies (e.g., via the CIB1 questionnaires and the CITCOM public workshop) a more detailed iteration of the formulation of alternatives

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* Although an attempt was made to carry out the formulation of alternatives in the manner suggested by Ortolano [1974], the rigid use of that approach was found to be neither convenient nor effective. The approach reported on herein, which is essentially a more flexible and deliberately iterative version of the approach suggested by Ortolano, was found to be quite useful in formulating a wide range of alternatives. A more complete account of this approach is given by Wagner [1975, pp. 105-108].

task was carried out. This took place during the summer and fall of 1974 and involved, for the most part, work carried out by the study managers and other members of the interdisciplinary planning group. The Federal and State fish and wildlife agencies participated in the formulation of alternatives by meeting with the interdisciplinary planning group in November 1974. Several alternatives were delineated at a level of detail sufficient to allow a preliminary estimate of economic benefits and costs in December 1974.

In January 1975, the CITCOM was presented with the several alternative actions that had been delineated by the District. Although the CITCOM (and a month later the City Council) had recommended that two of these actions be considered further, the District did not limit its attention to these two. The CIB2 and the environmental working paper, both of which were issued in April 1975, considered a wide range of alternatives.

As a result of impact assessment information generated during the process of preparing the CIB2 and the environmental working paper (and comments made in response to these documents) further modifications in the alternatives took place. In particular, one of the alternatives recommended by the CITCOM was determined to be infeasible because it would interfere with certain road relocations proposed by CALTRANS. The second alternative recommended by the CITCOM was modified to allow for preservation of a portion of the creekside vegetation.

The discussion below elaborates on the various ways in which the IOPP implementation activities influenced the formulation of alternatives. It also includes a brief digression on the activities associated with the so-called Environmental Quality (EQ) plan required by the Water Resources Council's Principles and Standards.

Public Involvement Activities

The early contributions of affected publics to the formulation of alternatives were made in the context of the CIB1 and the activities of the CITCOM. For example, the CIB1 questionnaire responses clarified the importance attached to certain evaluative factors (e.g., visual characteristics of the creekside environment), and these factors were given serious consideration in subsequent activities relevant to the formulation of alternatives. The CIB1 questionnaire responses indicated that there was no strong preference for any one type of action mentioned in the CIB1. The responses also included suggestions of alternatives that were not mentioned in the CIB1 (e.g. a linear park along SPC); some of these were subsequently studied by the District. Following the CITCOM's public workshop in March 1974, public involvement activities did not

play a substantive role in the formulation of alternatives until after the District completed an iteration of the formulation of alternatives task in the summer and fall of 1974.

Early in 1975 both the CITCOM and the City Council recommended two of the alternatives that the District had formulated. As noted above, these recommendations were poorly timed inasmuch as they were made prior to the release of the CIB2 and the environmental working paper. These two documents included information on the impacts of alternatives that was not considered by either the CITCOM or the City Council in making their recommendations.

Because they came after the above noted recommendations, the CIB2 questionnaire responses had a minimal influence on the formulation of alternative actions. The responses contained several alternative actions that were not mentioned in the CIB2 (e.g., constructing the holding ponds to detain flows upstream of the flood prone areas, deepening a proposed bypass channel to make it into a shallow lake).* However, the District could not consider these suggestions because they were clearly infeasible and/or they had been made "too late" (i.e., at a point in the process where most of the planning funds had already been spent.

One influence which the CIB2 responses did have on the formulation of alternatives concerns the preservation of creekside vegetation. One of the alternatives recommended by the CITCOM would have led to the removal of vegetation along the left bank of the Creek.** The concern of the CIB2 questionnaire respondents for this left bank vegetation was one of the several factors*** that led to a modification of the alternative to allow for the vegetation's preservation.

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* Although some of the suggested alternatives demonstrate a lack of understanding on the part of respondents concerning certain study issues (e.g., the effect of annual Creek maintenance on future flooding) and other ideas are probably physically infeasible (e.g., small holding ponds), they do indicate that the public is willing to spend time thinking about water-related problems and trying to come up with possible solutions.

** Although the CITCOM members valued the preservation of this vegetation, at the time they made their recommendations they were not aware that their recommendations involved the removal of this vegetation.

*** The other factors are noted below in the discussion of "the EQ Plan".

Interdisciplinary Planning Group Activities

The interdisciplinary planning group contributed to the delineation of alternatives presented in the CIB1. However, the principal contributions of the group to the formulation of alternatives were made during "brainstorming" sessions held during the summer and fall of 1974.*

The initial brainstorming dealing with the formulation of alternatives resulted in the identification of a wide range of alternatives. The "traditional" alternatives were initially discussed: rectangular concrete channel, trapezoidal concrete or rock riprap channel, dam and reservoir and set-back levees. The following two additional alternatives were identified on the basis of some ideas presented in the San Pedro Creek Master Plan:** (1) a levee on the right bank of SPC with a linear park and floodway in the left bank open space area, and (2) an underground pipe bypass system. The planning group also suggested that flood proofing and flood insurance be investigated as possible alternatives.

Although a wide range of alternatives were suggested during the brainstorming sessions, many of them were dismissed by the group leader because the alternatives were perceived as neither "solving" the primary flooding problem nor being within the District's authority to study or to implement. The following three examples illustrate this. First, since the group leader did not perceive upstream erosion as a problem which could be addressed within the District's study authority, any discussion of the use of gabions or sheet piles to control erosion was considered irrelevant. Second, flood insurance was not viewed as "solving" the flooding problem, even though it was mentioned by various local publics and government agencies throughout the study process. Third, since modifications to Pacifica's storm sewer system were not perceived as being within the District's authority to implement, any discussion of a cooperative effort with the City of Pacifica to investigate this issue was considered inappropriate; this occurred even though the underdesigned storm drain system was contributing to the flooding problems which the District was trying to alleviate.

* In preparation for these sessions, group members were made aware of the responses to the CIB1 questionnaires and the comments made at the CITCOM's public workshop.

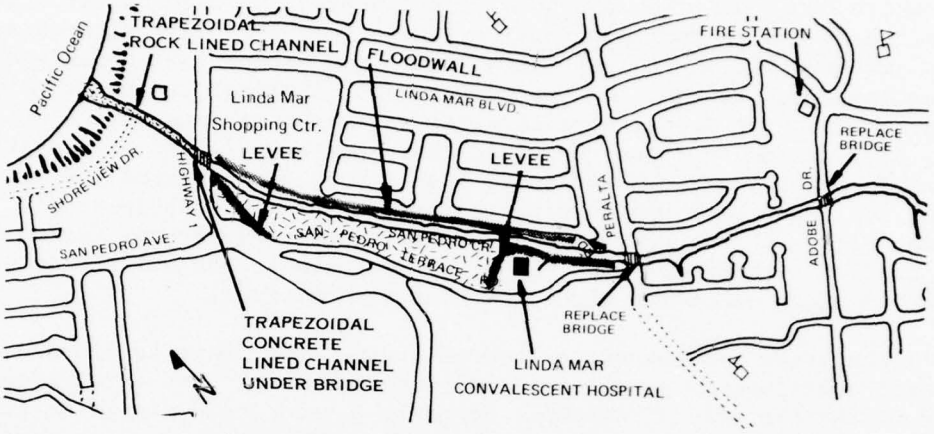
** This plan was prepared by an ad-hoc local citizen's group in March 1973 and was unofficially adopted by the Pacifica Parks, Beaches and Recreation Commission on June 19, 1973.

Formulation of the EQ Plan

Concurrent with the above mentioned planning group activities, the Environmental Branch personnel were developing an Environmental Quality plan as required by the Principles and Standards.* There was some debate among planning group members as to what exactly constituted an EQ plan and who should be involved in developing it. One group member suggested that local environmental groups should be involved in developing the EQ plan. However, a decision was made to have the Environmental Branch representative develop the EQ plan by himself. A number of rough sketch alternatives were subsequently identified as possible EQ plans. These included some of the previously mentioned alternatives (e.g., an underground pipe bypass system) as well as some new ideas (e.g., acquisitions of all the developed floodplain land and relocation of the existing structures).

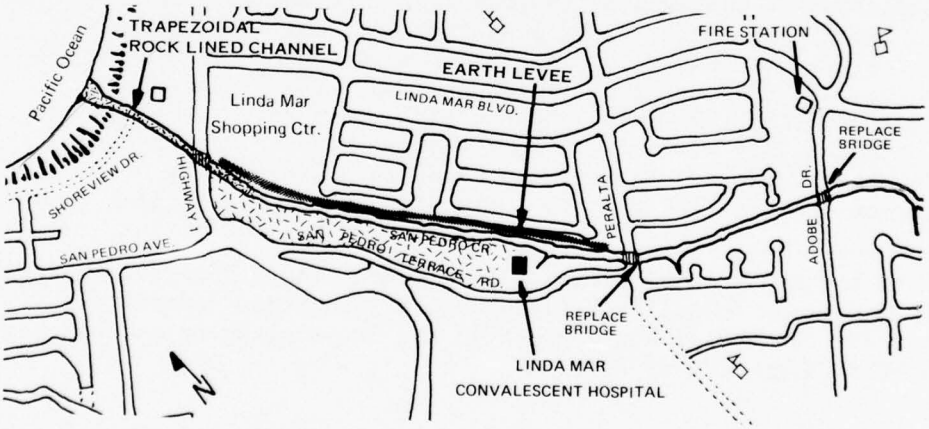
The EQ plan evolved in the following manner. As of November 1974 the following alternatives were being considered by the District: underground pipe bypass system, offset levee and park strip, trapezoidal rip rap channel, rectangular concrete channel, dam and reservoir and flood proofing. After further investigations, some modifications to the offset levee and park strip concept were proposed. Since the levee would require that substantial land be taken from the backyards of right bank property owners, a masonry or concrete wall four to six feet high that would require much less land was proposed. This concept evolved into the park and floodwall alternative (see Figure 4). However, one drawback to this park and floodwall alternative was that it required the removal of the left bank and its vegetation; this removal was required so that the left bank open space area could serve as a floodway to pass flows in excess of the Creek's capacity.

* General requirements for the EQ plan are contained in the Corps planning process regulations [U.S. Army-OCE, 1975, p. 10].



Symbol: Park

Figure 4. Park and Floodwall Alternative



Symbol: Bypass Channel and Park

Figure 5. Bypass Channel Alternative

In an effort to preserve the left bank vegetation as well as to minimize the aesthetic intrusion of a high right bank wall, the District's Environmental Branch personnel suggested a small one to two foot right bank levee combined with an excavated bypass in the left bank open space area which could also be developed as a linear park (hereinafter referred to as the bypass channel alternative, see Figure 5). This alternative would preserve all of the left bank vegetation except for openings at the entrance and exit of the bypass channel. Although the District's Planning Branch personnel were somewhat reluctant to investigate this plan, they agreed to do so when told that this constituted the Environmental Branch's conception of an EQ plan. This demonstrates the strong influence that the EQ plan requirement of the Principles and Standards gave to the Environmental Branch; this requirement for an EQ plan enabled them to persuade the study managers to investigate an alternative which otherwise might not have been studied.

As the study progressed, the bypass channel was shown to provide the greatest contribution to net national income and was therefore redesignated as the District's "National Economic Development" plan;* an economically infeasible alternative involving a pipe bypass was then designated as the EQ plan.** In early 1975 the CITCOM and the City Council recommended both the park and floodwall alternative and the bypass channel alternative. The bypass channel alternative was later found to be infeasible because it interfered with a CALTRANS road relocation proposal that was associated with future plans to upgrade Highway 1. Moreover, as a result of concerns expressed by the CITCOM and the Environmental Branch (and the CIB2 questionnaire respondents) the park and floodwall alternative was eventually modified. The modification involved raising the right bank floodwall by less than one foot in the upper reaches so that Creekside vegetation along the left bank could be preserved.. As of June 1975, this modified park and floodwall alternative represented the alternative which the District would have investigated in detail once the City of Pacifica made a commitment to meet relevant cost sharing requirements. In February 1976, the City Manager of Pacifica informed the District that the City did not have sufficient funds

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* This refers to the National Economic Development (NED) plan required by the Water Resources Council's Principles and Standards; general requirements for the NED plan are given in the Corps planning process regulations [U.S. Army-OCE, 1975, p. 10].

** The terms "economically unjustifiable" or "economically infeasible" are used herein to refer to alternatives with an economic benefit to cost ratio that is less than one.

to participate in funding the project.* Consequently, the District has not pursued its detailed studies.**

IMPACT ASSESSMENT

Impact assessment is the identification and prediction of the potential consequences (impacts) of implementing a particular course of action. The management of the impact assessment process is complicated by the fact that the number of potential impacts of any alternative actions under consideration is very large. In this connection Ortolano [August 1974, p. 775] notes that:

> Planners and publics need to make choices in conducting the impact [assessment] task. These choices concern the types of impacts that need to be analyzed and the level of detail required in the analysis. Choices have to be made because there are rarely sufficient resources (time, manpower, etc.) or basic knowledge to determine everything that it would be useful to know about the impacts caused by a particular action. For any given alternative, the information about evaluative factors and their relative importance serves to guide such choices [emphasis added].

If impact assessment is carried out iteratively as required by the IOPP, most of the information needed in meeting formal environmental impact reporting requirements*** will have been generated during the IOPP. More importantly, the information generated as part of the impact assessment task can be used in ranking alternatives and formulating new alternatives.

Public Involvement Activities

The public involvement activities carried out in implementing the IOPP led to the identification of key sources of data relevant to impact assessment. Examples of data sources identified as a result of public involvement activities include a biological survey conducted by

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* Letter from D.G. Weidner, City of Pacifica to Lt. Col. K.F. Schmid, SFD, February 19, 1976.

** Personal communication with Steven Lee, SFD, April 22, 1976.

*** One such requirement is the environmental impact statement called for by Section 102(2)(C) of NEPA.

a biology class at nearby Skyline College and the environmental impact report (prepared under the California Environmental Quality Act) on a local water district's application for additional water rights on San Pedro Creek.

Members of the public contributed to the impact assessment task when they articulated evaluative factors and indicated which factors they considered to be most important. Information of this kind was gathered in the context of each of the citizen information bulletin questionnaires and proved useful to the Environmental Branch in preparing the environmental working paper. For example, the responses to the CIB1 questionnaire gave the Environmental Branch a "checklist" which was used to insure that the full range of local concerns were addressed in the working paper.*

The questionnaire associated with the CIB2 contained a question designed to assist the District in carrying out its impact assessment. It asked people to list specific impacts which they would like discussed in the environmental impact statement (EIS) for a proposed project on San Pedro Creek. A number of the responses to this question identified the following impacts which previously had not been considered: vandalism of project recreational facilities; impact of the use of project associated recreational facilities on SPC and its environment; potential hazards to children's safety; impact of flooding on the use of recreational facilities; and impact of the disposal of spoil from the bypass channel alternative. These responses demonstrate the public's willingness to take the time to think about the impacts of various alternatives and to provide substantive input to the Corps concerning the preparation of an EIS.

Interdisciplinary Planning Group Activities

Although the planning group often discussed the general types of impacts that might be associated with different alternatives, there was only one group meeting that focused on impacts. This was the November 1974 meeting with representatives of the fish and wildlife agencies. The meeting included a discussion of the types of impacts that the different alternatives would have on the greenbelt corridor provided by the riparian vegetation in the SPC basin and on the SPC as a steelhead fishery.**

* This is discussed further in Chapter 3 under the following heading: "Relationship of the IOPP to the Preparation of the EIS."

** The representatives of the fish and wildlife agencies indicated that the greenbelt corridor provides habitat for "urban wildlife" (e.g., squirrels and birds) and plays an important role in maintaining ideal summer nursery conditions for the juvenile steelhead.

Although the planning group discussed impacts in general terms, it did not get involved in the details of impact assessment. Detailed assessments were made by individual members of the group. A systematic assessment of economic impacts was carried out in the winter of 1974; it was accomplished by the study managers and personnel in the Economics Section using economic benefit-cost analysis procedures. A sysematic assessment of environmental and social impacts was carried out by personnel in the Environmental Branch; the results from their assessment of the impacts of several alternatives were reported in the environmental working paper.*

EVALUATION

Evaluation (or plan ranking) involves making determinations regarding the relative value of different alternatives.** Thus it consists of judgements about the relative importance of various impacts. For example, an individual may consider it more important to accept the aesthetic impairment of a concrete lined channel if, all things considered, that appears to him to be the best way to prevent flooding of his property. In general, since different publics will value various impacts differently, there is no reason to expect that all publics will rank alternative actions in the same way.

There are two aspects of evaluation that make it especially complex. One is that all evaluative factors cannot be described and measured in the same units (e.g., dollars), and some factors, like those relating to visual impacts, often cannot be quantified at all. Moreover, there is no agreed upon way to aggregate the various measures of impacts. A second complicating aspect of evaluation is that the values that are used to measure the relative importance of various impacts are different for different affected interests. Thus, during the course of a planning study, it can be expected that a number of different evaluations will be performed, each reflecting the value positions of the individuals or groups involved. Ultimately, the District Engineer would consider these various evaluations together with the information associated with the other three planning tasks to make an evaluation that forms the basis for his recommendation of a course of action.

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* Summaries of the results from the aforementioned systematic assessments were synthesized by the Research Team as they became available; these summaries were a principal part of the CIB2.

** The term "evaluation" is used to mean the "ranking of alternatives". Although the term evaluation is ambiguous - value judgements are made in the context of all four planning tasks - it is used herein to maintain consistency with the terminology used in the Corps planning process regulations [U.S. Army-OCE, 1975].

The IOPP specifies that the evaluation task be performed concurrently with the other planning tasks throughout a study; this is reflected in the SPC field test. The discussion below comments on the several iterations of the evaluation task conducted in the context of the IOPP implementation activities.

Public Involvement Activities

The following four exercises in plan ranking were conducted: the CIB1 questionnaire respondents' ranking (March 1974); the CITCOM's ranking (January 1975); the City Council's ranking (February 1975); and the CIB2 questionnaire respondents' ranking (April 1975).

The CIB1 contained a general description of four categories of alternatives: "No-action", non-structural flood damage reduction measures, Creek modification, and other structural measures (e.g., a flood control dam). The CIB1 questionnaire solicited a general indication of both the most desirable and least desirable category of alternatives. The responses indicated a strong sentiment against the "no-action" alternative. While forty-three percent of the questionnaire respondents considered channel modification as the most desirable alternative, twenty-one percent of the respondents considered this as the least desirable. Many people noted that a combination of structural and non-structural action was probably the most desirable. Actions most frequently mentioned in combination included: floodplain insurance, land use controls, and channel modifications that minimize disruption to the natural Creek environment and preserve or enhance SPC as a steelhead spawning habitat. This information was utilized by the District planners in the formulation of specific alternative actions to mitigate future flood losses on SPC.

The rankings performed by the CITCOM and the City Council during January and February 1975 were made on the basis of information presented by the study managers. Although the study managers presented the economic benefits and costs of seven alternatives, they emphasized that only the three "economically justifiable" alternatives, (i.e., the park and floodwall, the bypass channel and a trapezoidal rock-lined channel) were eligible for federal participation. The CITCOM, with very little information available on non-economic costs and benefits, and considering only the alternatives that were economically justifiable, selected the park and floodwall and the bypass channel alternatives as their first and second choice recommendations, respectively; these recommendations were accepted by the Pacifica City Council with no discussion.

Another ranking accomplished during the SPC study was the one reflected in the responses to the CIB2 questionnaires. Although the

CIB2 responses did not reveal a clear preference for any alternative, they did indicate that the park and floodwall and bypass channel alternatives were clearly preferred over the trapezoidal rock-lined channel and no-project alternatives. The most frequent reasons given by the CIB2 respondents for preferring the bypass channel alternative were that it minimizes the disruption to the environment, preserves the left bank vegetation, and provides the "best solution for the money". The most frequent reasons given for the least preferred alternatives were either that they did not solve the flooding problem (no-project alternative) or they were too ugly and would destroy the Creek environment (trapezoidal rock-lined channel). Although the bypass channel alternative was subsequently rendered infeasible due to CALTRANS' objection thus making the CIB2 respondents' preferences for it inconsequential, the CIB2 respondents' reasons given for preferring the bypass channel alternative did provide the study managers with an added impetus to reinvestigate a modification to the park and floodwall alternative that would preserve the left bank vegetation.

Interdisciplinary Planning Group Activities

The interdisciplinary planning group as a whole did not perform any formal rankings of alternatives.* However, there were two rankings that were made in the context of the group's activities: the ranking performed by the fish and wildlife agency representatives and the ranking performed by the study managers.

Several rough sketch plans were presented at the November 1974 meeting of the planning group and the fish and wildlife agency representatives. After these rough sketch plans were further delineated, the California Department of Fish and Game ranked the alternatives based on their perceptions as to how the alternatives would effect the fish and wildlife resources of SPC.** Although both the Federal and State fish and wildlife agencies preferred the pipe bypass alternative because it had the least impact on fish and wildlife, they seemed willing to accept either the park and floodwall or the bypass channel alternatives provided a low flow channel was included in the lower reaches of the Creek.

The ranking which the study managers performed was made prior to the CITCOM's meeting in January 1975. This ranking was based on the results

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* Informally, however, the group was continually ranking alternatives in making decisions about which alternatives to investigate.

** Letter from J.C. Fraser, Region III Manager, California Dept. of Fish and Game, Yountville, CA., to Colonel James L. Lammie, SFD, March 10, 1975.

from the economic benefit-cost analysis and on the judgements of the study managers regarding which alternatives the CITCOM would find acceptable. Although the study managers did not refer to their presentation at the January 1975 meeting as a ranking, the nature of their presentation made it clear that they had conducted an implicit ranking. The study managers implicitly ranked the three economically justifiable alternatives in the following order: park and floodwall, bypass channel and trapezoidal rock-lined channel.*

These various ranking exercises yielded a concensus among the District, the CITCOM and the City Council that, as of July 1975, the park and floodwall alternative modified to preserve the left bank vegetation represented the most attractive alternative.** There are two issues relating to these various rankings that are especially noteworthy. First, the rankings performed by the study managers and the CITCOM were accomplished before much relevant impact assessment information was available, namely, the information provided by the environmental working paper and the CIB2 questionnaire respondents. Although this information led to the modification in the park and floodwall alternative, its potential use was never fully realized in the ranking of alternatives since it was generated after the CITCOM made its formal recommendations in January 1975. Second, the concept of an EQ plan did not play a significant role in any of the plan ranking exercises. Both of these issues are explored more fully in Chapter 3, which evaluates the effectiveness of the IOPP implementation activities used in the SPC study.

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* This ranking was based on the assumption that the left bank vegetation was not worth preserving, and that it would be an improvement to replace the existing left bank vegetation with bushes, etc. during the landscaping phase of a constructed project.

** As noted above in the section on "Formulation of Alternatives", more detailed studies of this alternative have not been undertaken because of the inability of the City of Pacifica to meet the relevant cost sharing requirements.

Chapter 3

EVALUATING THE ACTIVITIES USED IN IMPLEMENTING THE IOPP

"An evaluation study does not generally come with final and unequivocal findings about the worth of a program. Its results often show small, ambiguous changes, minor effects, outcomes influenced by the specific events of the place and the moment. It may require continued study over time and across projects to speak with confidence about success and failure."

Carol Weiss, Evaluation Research

As noted in Chapter 1, the second objective of this research was to evaluate, as objectively as possible, the activities used in implementing the IOPP from the perspectives of the various planners and publics involved in the San Pedro Creek field test. This chapter describes the design, conduct and findings of that evaluation.

APPROACH USED IN CONDUCTING THE EVALUATION

The evaluation focused on the concepts and activities of the planning process (IOPP) utilized on the San Pedro Creek study as opposed to the outcome of the process (i.e., the plan selected to mitigate future flood damages). This focus on process rather than outcome was necessary for two reasons. First, it is impossible to compare the characteristics of the plan resulting from the IOPP with one resulting from the planning process that would ordinarily have been used by the District with the intent of determining which is better; the latter plan does not and cannot exist. Second, even if if the latter plan did exist, there is no definitive, accepted set of criteria for determining which plan is better, except perhaps in the context of the process used to select the plan. Thus, the emphasis herein is on evaluating various characteristics of the planning process. The evaluation was based on interviews, which were used to draw conclusions about the IOPP in the context of the SPC field test.

Without some structured, systematic way of exploring the effectiveness of various activities utilized during the SPC field test, the evaluation would have had to rely heavily on impressionistic, subjective judgements based on the researchers' values and their interpretation of what happened throughout the field test. Although a rigorous evaluation built around the notion of a controlled experiment was impossible, some type of standard of comparison was required. Otherwise it would have been impossible to answer the following important questions: Did the IOPP implementation activities make any differences? If they did how effective

were the differences? Wherever appropriate, a standard of comparison based on the past experiences of those interviewed was employed.* For example, the District planners interviewed were asked to use their recent experiences on similar continuing authority studies to respond to questions about how the SPC study would have been conducted if the IOPP had not been employed. Similarly, the standard of comparison used for interagency personnel involved in the SPC study was their recent association with San Francisco District studies in the context of interagency coordination.

The design of the SPC field test evaluation involved developing "schedules" for use in interviewing representatives from each of several categories of participants.** These categories are shown in Table 2, which also shows the number of people in each category that were interviewed.*** The interview schedules dealt with issues related to each of the following topical areas: the public involvement and interdisciplinary planning group activities used in implementing the IOPP; the effectiveness of the IOPP in expanding the range of alternatives; and the effectiveness of the IOPP in dealing with key environmental and social concerns. The interviews (hereinafter referred to as "evaluation interviews") were conducted during May and June 1975.****

Because only a single case study is involved, evaluation interviews are necessarily limited to the experiences of the SPC field test; consequently the interview results have limited utility in generalizing to other Corps Districts as well as to other types of Corps studies. Despite this limitation, a number of findings from the interviews can be

* A discussion of alternative standards of comparison that were considered for use in the evaluation is given by Wagner [1975, p. 210 et seq.].

** An interview schedule consists of a set of questions designed to structure the exploration of certain issues during the conduct of an interview.

*** In addition to the evaluations noted in Table 2, evaluative information was also obtained from the April 1974 telephone survey of 243 people who had received the CIB1 but had not returned the CIB1 questionnaire; information from this survey is referred to occassionaly in this chapter.

**** With few exceptions, the discussion in this chapter does not identify specific individuals with the various interview results. To the extent possible, the Research Team assured confidentiality of responses in order to encourage candidness. The few exceptions relate to situations where the meaningfulness of the response requires the identification of a position title (e.g., a representative of the Districts' Environmental Branch).

Table 2

SPC Study Participants Interviewed During the Evaluation

San Francisco District Personnel

2 District planners (not associated with SPC study)[1]

2 District SPC study managers

3 District planning supervisors[2]

4 District SPC Environmental Branch members

6 District SPC technical specialists[3]

South Pacific Division Personnel

2 planners who attended the SPC study Plan Formulation Conference[4]

2 US Fish and Wildlife Service specialists

Citizens Committee - 3 members

Pacifica City Council - 2 members

Active Public - 20 people who attended an SPC study meeting and/or filled out a questionnaire

Inactive Public - 20 people who received the CIB2 but did not return a completed CIB2 questionnaire

Linda Mar Shopping Center Merchants - 10

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1. Planners interviewed in an attempt to define a "typical" continuing authority study process and also to pretest the "planner" interview schedule.
2. District staff members holding supervisory positions within the Planning Branch.
3. District staff members, other than the study managers and Environmental Branch members, who participated in the interdisciplinary planning group's activities.
4. A meeting between the District and the South Pacific Division held in April 1975.

used to improve future Corps planning efforts. These findings are discussed in the remainder of this chapter and are organized around the aforementioned topical areas.

PUBLIC INVOLVEMENT ACTIVITIES

One of the defining characteristics of the IOPP is that planning should be open to various affected interests. The discussion below reports on how District personnel and members of the public felt about the extent of public involvement; it also considers some of the ways in which District personnel utilized the information generated from the public involvement program. The discussion makes only occasional reference to information that the evaluation interviews yielded regarding the various techniques of public involvement used during the SPC field test. Although the detailed technique-related information is of interest, it is not central to the evaluation of the IOPP implementation effort per se. A discussion of the results from the evaluation interviews that concern technique-related issues is presented in Wagner [1975, pp. 177-192].

The Extent of Public Involvement

The five District planners* were asked to compare the extent of public involvement in the SPC field test with the extent of public involvement in other similar District studies. The responses from the planners were varied. One felt that the SPC study did not involve any more affected interests than would normally have been involved, and he noted that the "vocal publics" would be involved in any case. Another felt that the SPC study involved more affected interests than usual as evidenced by the responses to the questionnaires associated with the two citizen information bulletins (referred to hereinafter as the CIBs), which the District would normally have not distributed. All five expressed concern over the apparent lack of public interest generated in the SPC study as indicated by the small attendance at the CITCOM's public workshop and the City Council's public meeting and the low response rates to the two citizen information bulletin questionnaires.**

Interviews with twenty members of the "active" public (defined herein as those who had participated in the SPC study) provided useful

* The term "District planners" hereinafter refers to the two District study managers and the three District planning supervisors noted in Table 2.

** Wagner [1975, pp. 173-176] discusses reasons for this low response rate. He also elaborates on the various suggestions which the District planners made regarding ways to increase the extent of public involvement, e.g., use of information bulletins designed around a cartoon format [Wagner, 1975, pp. 221-224].

information regarding the extent of involvement. In responding to the question concerning why they participated in the SPC study, most people mentioned one or more variations of the following responses: they would have had no right to complain about a decision afterwards if they did not participate; they wanted to affect the District's decision; or they felt obligated to inform the District of personal knowledge they had about the specific project area and its problems.

In general, the results from the evaluation interviews suggest that the District's effort to prepare and distribute the CIBs helped develop the feeling that the District is serious about soliciting and considering the public's concerns. Several people indicated that the District "must have considered the public's responses otherwise the District would not have gone to the trouble of preparing and distributing the bulletins"; several others observed that the District was probably using the aggregate responses to the questionnaires as an expression of the general public's feelings toward various alternatives. The following two aspects of the observations made by the active publics are especially noteworthy: (1) many people mentioned that they were impressed with the District's efforts to contact them personally in order to determine their views about the SPC (e.g., contacts made via the CIB1 follow-up telephone survey and the CIB2 hand-delivery and pick-up);* and (2), several people indicated that they would have liked to have been kept informed of how their responses influenced the study activities.**

In addition to discussions with people who were active, the evaluation interviews also involved discussions with members of the "inactive" public (i.e., local residents who were contacted but did not participate in the SPC study). In fact, members of the inactive public were interviewed on two separate occassions during the field test. The first involved the telephone survey conducted in March 1974 of 243

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* Although many of these contacts were made by Stanford students, the public perceived the students as being official representatives of the District.

** The only direct feedback provided to the public during the SPC study were the summary report of the CIB1 questionnaire responses mailed five months after the CIB1 was distributed, and the summary of the CIB2 questionnaire responses presented at the June 1975 City Council study session. Although the evaluation interviews did not explore directly the impact of the above feedback, the interview responses generally suggest that it might be desirable to provide more timely feedback (e.g., using short progress reports) on how the public's responses are considered during the course of any study.

people who had received the CIB1 but had not responded. The second involved a telephone survey conducted in July 1975 of twenty people who had received the CIB2 but had not responded.

Those contacted in the March 1974 survey were asked why they did not return the CIB1 questionnaire. Twenty five percent of the 96 people responding to the question did not perceive the SPC study as affecting them, despite the fact that many of these people had homes in the SPC floodplain.* The following question was also asked: "The extent of the local costs or who bears them has not been determined yet, but there will be some local costs (e.g., lands, bridge modifications, operation and maintenance). Do you think you would be more interested in the SPC study if you knew more about the local costs that will be involved?" Thirty-four people responded "Yes" to this question and twenty responded "No".

The responses to both of these questions indicate the importance of clarifying in future studies the "stake" that people have in a study. The importance of clarifying people's stake in a study was again indicated by the responses to the July 1975 telephone survey in which about half of the people indicated either that the study did not affect them or that had they known about the local costs involved they would have filled out the CIB2 questionnaire. Other reasons why more people did not fill out the questionnaires associated with the citizen information bulletins deal specifically with the length and format of the CIBs and questionnaires [Wagner, 1975, pp. 177-192].

Utility of the Public Feedback to District Planners

The reactions of three of the District planners regarding the utility of the public feedback were mixed.** One planner felt that the SPC questionnaires generated both useful factual information (e.g., identification of upstream erosion problems) and useful values information (e.g., concern for bank vegetation and steelhead fishing). He indicated that this information led to the consideration of certain alternatives (e.g., bypass channel and modification of the park and floodwall alternatives) which otherwise might not have been considered. A second planner felt that the public feedback obtained from the SPC study was no different, either in type or in extent of response, from what is normally obtained on a District planning study. A third planner emphasized that much of the public feedback obtained from the CIB questionnaires was redundant inasmuch as the same concerns

* All of the responses to this question are summarized in Wagner [1975, p. 174].

** Only three of the five District planners were able to address issues relating to the utility of the public feedback based on their personal involvement in the SPC study.

had already been expressed by the fish and wildlife agencies, the CITCOM and the City of Pacifica.*

The evaluation interviews raised some important points about the timing of the information provided by the public. Each of the five District planners felt that, although the CIB2 questionnaire responses concerning the ranking of alternatives and the identification of new alternatives were marginally useful, they could have been very useful had the timing of those responses been different. The timing of the CIB2 was considered inopportune for two reasons: (1) the tentative selection of alternatives made by the CITCOM at their January 1975 meeting rendered the publics ranking of alternatives in response to the CIB2 questionnarie somewhat superfluous;** and (2), the alternative actions suggested in the CIB2 questionnaire response came after most of the study funds had been depleted. These circumstances demonstrate the critical importance of integrating the public involvement activities into the District's time schedule of other study activities.

An Environmental Branch representative was also interviewed regarding the utility of the public feedback. He indicated two ways in which he found the information useful. First, the responses to the CIB2 questionnaire gave him some advance notice on questions relating to impacts which are usually not raised until the draft environmental impact statement. Second, the responses to the CIB1 questionnaire gave him a much better indication of the local problems and needs than he was otherwise able to obtain.*** The Environmental Branch representative also mentioned that he would have preferred more detailed information on the nature of some of the local problems and needs raised in the CIB1 questionnaire responses (e.g., upstream erosion and the existence of rats on the Creek banks).

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* More generally, all five of the five District planners indicated that the use of CIBs and questionnaires was not cost-effective continuing authority studies; they also indicated that the use of CIBs might be cost-effective on survey investigations, provided the questionnaire response rates could be increased. Details relating to the District planners observations on the cost-effectiveness of the CIBs and questionnaires are contained in Wagner [1975, pp. 185-192].

** Although it may have been unintentional, the CITCOM's selection, which was subsequently approved by the City Council in February 1975, had a rather final appearance; and this tended, in a subtle way, to decrease the importance attached to the CIB2 questionnaire results.

*** He used the CIB1 questionnaire responses to delineate the statement of study objectives in the environmental working paper.

INTERDISCIPLINARY PLANNING GROUP ACTIVITIES

The SPC field test relied on the use of an interdisciplinary planning group to bring about the continual flow of information between planners and other specialists called for by the IOPP. In setting up the group it was assumed that coordination between specialists in the context of the group would be more effective than coordination carried out using more formal written communication (e.g., *memoranda*, referred to as "disposition forms", from the study manager through formal channels to branch and section chiefs, and then finally to staff specialists).* It was also assumed that the synergistic effects of interactions within the group context would lead to the identification of alternatives and impacts which otherwise might not be identified.

To investigate whether these assumptions were correct, each of the members of the interdisciplinary group was asked to describe the advantages and disadvantages of the planning group meetings and any existing institutional constraints which they felt might preclude the effective use of the interdisciplinary planning group concept.

All but one of the planning group members felt that the interdisciplinary planning group concept served a number of useful purposes. Those who found it useful felt that the planning group:

1. Provided a chance to meet and to interact with the other District staff members working on the study.

2. Provided insights into how an individual group member's contributions were integrated into the total study effort.

3. Provided an appreciation, although necessarily somewhat limited, of the activities of the other specialists involved in the study.

4. Facilitated informal coordination among the various specialists.

5. Allowed members to take advantage of a multitude of different backgrounds while brainstorming about various study issues.

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* These formal coordination mechanisms, as used in the San Francisco District, are illustrated in a case study of District planning for the Carmel River prepared by Randolph and Ortolano [1975, Chapter 4].

6. Helped to keep the planning group members informed of the study activities and served to motivate them since they felt more of a personal association with the study.

7. Eliminated the "filtering" of information by the study manager, which is characteristic of the District's current organizational format.*

The one dissenting member felt that the interdisciplinary planning group concept was not that useful because it required each member to be educated in the fundamentals of the other members' disciplines. In addition, he felt that the existing level of informal coordination between District staff members was adequate. Although the general consensus was that the interdisciplinary planning group concept was useful, the concept was not without its shortcomings.

Problems Associated with the Interdisciplinary Planning Group

The evaluation interviews identified a number of problems with the way in which the activities of the interdisciplinary planning group were conducted during the SPC field test. The problems mentioned fall into two cateogories: (1) those dealing with group leadership, and (2) those dealing with inefficiencies in the use of time.

Four problems were raised regarding group leadership. First, some of the issues discussed at group meetings were not brought to a "closure" by the group leader (i.e., no specific final decisions were made to direct the activities of group members). Second, the addition of an assistant study manager and the lack of clarification over who was "in charge" generated some confusion among the other group members. Third, on several occasions the group leader summarily dismissed suggestions made by planning group members; this made some members perceive their comments as carrying little weight in making study decisions. Fourth, certain reference materials were not brought to the attention of the appropriate planning group members by the group leader thus causing those members to "waste" time in locating these sources on their own.

The second category of problems mentioned concerns inefficiencies in the use of time during the planning group meetings. Some members felt that much time was "wasted" discussing and studying certain alternatives (e.g., dam and reservoir) which could have been eliminated as completely infeasible very early in the study. Other planning group members felt that meeting time was wasted when a discussion centered on the knowledge of a specific discipline. And finally, a few

* This filtering occurs, for example, when the study manager serves as the middleman between the Hydraulics Section and Design Branch.

members felt that some of the planning group meetings were too short to allow a full discussion of the issues raised.

Interaction Between the Planning Group and Specialists in Other Agencies

Another aspect of the planning group's activities that was examined during the evaluation interviews concerns the group's coordination with technical specialists in other agencies. The discussion below considers whether the timing of interagency coordination during the SPC field test was earlier than on current similar District studies. Also explored is whether the District's consideration of review agency concerns was greater during the SPC field test than on current similar District studies. To investigate these matters, both District and review agency staff members were interviewed to determine their perceptions of what normally happens during current similar studies versus what happened during the SPC field test. These interviews involved four representatives from the fish and wildlife agencies, three representatives from the District's Environmental Branch and four of the District planners.

With few exceptions, individuals interviewed felt that the interagency coordination on the SPC study was no different from coordination on similar recent District studies in terms of both the timing and nature of the coordination and the extent to which review agency concerns were considered by the District. Members of the District's Planning Branch felt that the interagency coordination was useful, especially the November 1974 meeting, in that it gave the District staff preliminary insights into the fish and wildlife agencies' concerns and their ranking of the rough sketch alternatives presented. The District Environmental Branch representatives indicated that the District's serious consideration of fish and wildlife agency concerns in the SPC study was due primarily to various Federal laws and regulations (e.g., NEPA, Principles and Standards, and the Fish and Wildlife Coordination Act) and not due to any special effort made during the SPC study.

IOPP AND SELECTED ASPECTS OF TASK PERFORMANCE

In addition to examining the IOPP implementation activities in general, the evaluation interviews were also used to provide a clearer understanding of the influence of the implementation activities on two of the planning tasks: formulation of alternatives and impact assessment.

Formulation of Alternatives

Range of Alternatives. The discussion below explores how effective the implementation of the IOPP was in broadening the range of alternatives that were identified and considered in the SPC field test as

compared with recent similar District studies. To examine this issue, various District staff members were asked to compare the range of alternatives on the SPC study with other current similar studies. In cases where a difference in the range of alternatives existed, District planners were asked to try to identify which factors were instrumental in contributing to that difference.

The interview responses of the District staff were mixed. The Planning Branch personnel felt either that the range of alternatives identified and considered was about the same as on similar studies or that the range of alternatives was too broad. That is, it covered some alternatives (e.g., an upstream dam) which were known a priori to be infeasible. One person from the Planning Branch noted that the question in the CIB2 questionnaire asking the public to suggest any other alternatives which might assist in solving "some or all of the water related problems on San Pedro Creek" was inappropriate since the Corps' study authority was not this broad.

On the other hand, the Environmental Branch personnel interviewed felt that the range of alternatives identified and considered in the SPC study was somewhat broader than on similar studies. This, they felt, was due primarily to the EQ plan requirement of the Principles and Standards and the increased attention paid to concerns expressed by the local public. In addition, one Environmental Branch member felt that although some alternatives were identified in the CIB questionnaire responses (e.g., modifications to existing storm drainage system), they were not seriously considered because it was decided that they were outside the implementing authority of the Corps. He noted, however, that this view unnecessarily narrowed the scope of the investigation prematurely. In his view, the Corps should investigate all alternatives and recommend the "best" plan of action regardless of the limits on the Corps' implementing authority.*

The EQ Plan. Another aspect of the formulation of alternatives that received consideration during the evaluation interviews concerned the concept of the EQ plan required by the Water Resources Council's Principles and Standards. The following questions regarding the application of the EQ plan concept in the SPC field test were sources of much confusion among the Planning Branch and Environmental Branch

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* This view is consistent with the Corps' planning process regulations [U.S. Army-OCE, 1975, p. 11] which state that: "Other plans proposed by governmental or non-governmental interests, will be identified and included in the planning process. These will include appropriate 'non-Federal' plans that would likely be undertaken in the absence of the Corps plan. Such plans will be assessed and evaluated along with the alternative plans developed by the Corps".

personnel interviewed: What criteria should be used in defining the EQ plan? What role should the EQ plan play in the planning process? The views of the SPC study personnel regarding the criteria for defining the EQ plan varied. At one extreme, there were those who felt that the EQ plan must be economically feasible (i.e., a plan with a benefit-cost ratio of one or greater) and address all of the planning objectives. At the other extreme were those who felt that the EQ plan did not have to be economically feasible and had only to address the objective of "enhancing the environment". The SPC study personnel also varied in their opinions of the role of the EQ plan. Some felt that the EQ plan had to be identified solely to meet the requirements of the Principles and Standards; others felt that the EQ plan could play a useful role in "trade-off analyses" by helping to establish the "value" of environmental features which could be incorporated into a project.

The influence of the IOPP implementation activities in formulating the EQ plan was indirect. The EQ plan was formulated by the Environmental Branch without any direct input from the public and with only informal review comments from the interdisciplinary planning group. However, the information from the early public involvement activities (e.g., the CITCOM's public workshop) helped the Environmental Branch personnel to identify key environmental concerns of the local public.

The evaluation interviews raised one additional point regarding the EQ plan. The Environmental Branch representatives to the interdisciplinary planning group felt that the EQ plan (i.e., the pipe bypass alternative) should have received the same status and emphasis in the CIB2 as the three alternatives that were highlighted, despite the fact that it was economically infeasible. These representatives argued that highlighting the EQ plan and its impacts would have helped citizens clarify their values by indicating: (1) what environmental features they would have to forego by supporting another plan, and/or (2) what the public would have to pay to have those environmental features included in a project. However, highlighting the EQ plan in the CIB2 would have increased the length of the CIB2 and required the public to give serious consideration to still another alternative (one that was economically infeasible). The Environmental Branch representatives felt that these factors would have been offset by the "benefits" of featuring the EQ plan in the CIB2. The Environmental Branch representatives argued that in any case the Principles and Standards requires the EQ plan to be considered seriously throughout the entire planning process.

Impact Assessment

Timing and Consideration of Key Environmental Concerns. The issues explored below concern whether the timing of the identification of key

environmental concerns during the SPC field test was earlier than on current, similar studies; and to the extent that the identification of environmental concerns was earlier during the SPC field test, whether this increased the likelihood that the key environmental concerns were seriously considered in the study.

Virtually all of the District Planning Branch and Environmental Branch personnel interviewed regarding the timing of the identification of environmental concerns felt that the key environmental concerns were identified early in the planning process although no earlier than on other, current studies. They felt that most of the environmental concerns were identified from the comments made by the fish and wildlife agencies, the CITCOM, and those attending the CITCOM's public workshop and from the responses to the CIBl questionnaire. The District personnel interviewed also felt that these environmental concerns were seriously considered in the formulation of alternatives. The one exception concerned the left bank vegetation. Since the Planning Branch personnel initially did not consider this left bank vegetation to be very important, its preservation was not considered essential. However, the widespread local concern for this vegetation, together with the EQ plan requirement of the Principles and Standards, enabled the Environmental Branch personnel to convince the Planning Branch personnel to investigate the bypass channel alternative,which preserved the left bank vegetation.

One issue that was raised during the evaluation interviews with the Environmental Branch representatives, the CITCOM, and the City Council dealt with the timing of the environmental working paper. All three groups noted that the environmental working paper would have been very useful in ranking alternatives had it been available prior to when the CITCOM and City Council decisions were made on which alternative to recommend. This indicates the importance of timing the working paper on future studies so that it will be available prior to when an alternative is to be selected.

Relationship of the IOPP to the Preparation of the EIS. Another question explored during the evaluation interviews concerns whether the iterative nature of the IOPP facilitates the preparation of the environmental impact statement. Since the EIS for the San Pedro Creek study had not been prepared at the time of the evaluation interviews, this question was investigated by asking an Environmental Branch representative to the interdisciplinary planning group to comment on his experience in preparing the working paper.

The Environmental Branch representative noted that the iterative nature of the SPC field test, which identified impacts from the beginning of the planning process and solicited public comments through the

use of the CIBs, facilitated his preparation of the working paper in the following five ways. First, the CIB1 questionnaire responses helped him to delineate the local objectives prior to his preparation of the working paper; until that time, the local objectives had not been explicitly stated. Second, the responses to the CIB1 questionnaire and the information in the draft CIB2 served as a "checklist" to insure that he had covered the full range of relevant impacts in the working paper. Third, the comments from the CIB1 questionnaires and the CITCOM gave him some advance notice of questions which are usually not asked until the draft EIS; this enabled him to answer some of these questions in the working paper. Fourth, the comments on the CIB2 questionnaire identified some additional impacts which had not been discussed in the working paper and which needed to be addressed in the draft EIS. Fifth and finally, all the comments made throughout the study by the public, the CITCOM and the review agencies gave him insights into which issues were most significant. These insights together with the Corps guidance on issues which must be addressed in any study [U.S. Army-OCE, 1972; U.S. Army-OCE, 1975], assisted the Environmental Branch representative in allocating his limited budget wisely so that he could concentrate his efforts on the significant study issues.

The discussion above documents how the various participants in the SPC field test felt about the IOPP implementation activities. The following chapter synthesizes the findings from the evaluation interviews to draw some conclusions and make recommendations for future studies.

Chapter 4

IMPLICATIONS OF THE SPC FIELD TEST EXPERIENCE

"All crises begin with the blurring of a paradigm and the consequent loosening of the rules for normal research... And all crises close with the emergence of a new candidate for a paradigm and with the subsequent battle over its acceptance."

Thomas Kuhn, The Structure of the Scientific Revolution

The last of the three research objectives specified in Chapter 1 calls for the use of the findings from the San Pedro Creek field test to assess the utility of the IOPP in future studies. Inasmuch as OCE has recently adopted a planning process quite similar to the IOPP, this assessment is especially relevant to Corps of Engineers' planners. The first part of the assessment uses the results from the SPC field test as the basis for commenting on the utility of the IOPP. This is followed by a description of various ways in which future planning studies based on either the IOPP or the Corps' recently adopted planning process [U.S. Army-OCE, 1975] could be improved.

COMMENTS ON THE UTILITY OF THE IOPP

Although it was far from perfect in many respects, the SPC field test experience can be considered a success in the sense that it yielded a widely supported proposal for action in a reasonably efficient manner. That the City of Pacifica is currently (1976) unable to provide its share of the costs of the selected action does not detract from the District's overall study effort. The discussion below, which uses the experience gained from the San Pedro Creek field test as the basis for commenting on the utility of the IOPP, is framed in terms of the various characteristics of the IOPP introduced in Chapter 1. Various problems in implementing the IOPP are merely mentioned here; they are discussed further in the following section.

The Iterative Nature of the IOPP

The IOPP requires that work on all four planning tasks be initiated at the outset of a study. This early focus on all four tasks was effectively implemented during the SPC field test. The CIB1, the CITCOM's public workshop, and the initial interdisciplinary

planning group meetings each considered aspects of all four tasks; they permitted the identification of most of the significant study issues during the initial stage of the SPC study. For example, the CIB1 questionnaire responses concerning the relative importance of various evaluative factors gave the interdisciplinary planning group a good indication of the issues that would need to be examined in subsequent stages of the study. This early recognition of evaluative factors is important in bringing about the efficient utilization of the limited time and budget available for planning.

The IOPP calls for the concurrent consideration of all four planning tasks, and this appeared to be consistent with the way study participants thought through study issues. That is, rather than thinking only in terms of "the problem" or only in terms of alternatives, study participants considered problems, alternatives and impacts concurrently and iteratively. For example, the general discussion of alternatives in the CIB1 stimulated questionnaire responses that described individual perceptions of the problem and various impacts which citizens felt should be considered.

Using the IOPP, planning is carried out in stages, with each stage considering all four planning tasks in a continually iterative fashion (recall Figure 2). The SPC study demonstrates the feasibility of proceeding in this manner. Moreover, the SPC study highlights the importance of working on all four planning tasks before a Plan of Survey is completed.* This initial work on all four tasks serves to identify categories of publics and key study issues at the outset. In subsequent stages of the IOPP, work on all four tasks is continued at increasing levels of detail.

The IOPP requires that study priorities and scheduling be reexamined and updated continually using information generated by the planning process per se. With all four tasks considered concurrently, and with information being generated by planners, publics and technical specialists, the requirements for the coordination of study activities and information can be demanding; these coordination requirements were a significant source of difficulty in utilizing the IOPP.

Another aspect of the IOPP related to its iterative nature concerns the interdependencies among the four planning tasks (see Figure 1). This recognition is often implicit in Corps planning studies. The IOPP requires that these interdependencies be given explicit consideration so that all participants in a study will be encouraged to think in

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* It is worth noting that the Corps planning process regulations [U.S. Army-OCE, 1975, p. 14] call for an iteration of all four planning tasks before completing a Plan of Survey.

terms of how information generated in the context of one planning task can influence the other tasks. An example of this recognition of interdependencies in the SPC study is the influence that public concerns for the left bank vegetation (impact assessment) had on the modification of the park and floodwall alternative (formulation of alternatives).

The Open Nature of the IOPP

As mentioned above, the early identification of evaluative factors can contribute significantly to the efficient allocation of the time and budget available for planning. The IOPP is based on the notion that all important evaluative factors cannot be determined solely by District planners; affected publics, technical specialists and representatives of relevant governmental agencies must be involved in delineating such factors. The IOPP also presupposes that the delineation of a proposed action that is in the public interest can be facilitated by involving affected publics, technical specialists and agency representatives in all four planning tasks. For these reasons, the IOPP calls for open two-way communication between District planners, various publics, technical specialists within the District, and staff members in other agencies. These various information flows are considered below.

The IOPP's requirement for two-way information flows between planners and publics involves more than the provision of information to publics and the solicitation of public feedback. It requires a commitment to public involvement that includes (1) giving serious consideration to the information provided by publics and (2) informing publics of how such information is being utilized. If information is solicited from publics and not considered seriously, then the communication effort is little more than a public relations exercise. If publics are not informed of how their feedback to planners has been utilized, then they can hardly be expected to continue to participate in a study. To the extent that this level of commitment to public involvement is not accepted among Corps planners, there will be difficulties in implementing the IOPP.

The SPC field test relied on an interdisciplinary planning group to facilitate communication between District planners and technical specialists. The field test suggests that a planning group may be a more effective way of integrating the activities of District specialists than the use of formal written communications coordinated through a study manager. The interdisciplinary planning group meetings improved the information flows between technical specialists involved in the field test and helped to ensure that information generated concerning one task was used to guide other study tasks.

In addition to open communication within a District office, the IOPP requires two-way communication between District staff and staff members in other agencies. The usual mechanisms for interagency coordination involves formal written communication routed through formal chains of command in the Corps and other agencies. The IOPP calls for supplementing this with early informal coordination between staff level personnel. Such early and continuous staff level contact leads to the timely identification of key study issues and the avoidance of delays that often occur when substantive interagency coordination is initiated late in a planning process. The SPC field test demonstrated that if personnel in other agencies (e.g., fish and wildlife agency representatives) are encouraged to participate early in a study, they can contribute to all four planning tasks. The field test also demonstrated that informal verbal interagency coordination is acceptable and encouraged by some staff members in other agencies.

Although it remains to be demonstrated conclusively, the open nature of the IOPP can lead to efficiencies in delineating a proposed action that is acceptable to affected publics and relevant governmental agencies. People are more likely to accept a proposal if they have had an opportunity to express their concerns and to influence the outcome of a planning study. The openness of the IOPP may increase the requirements for coordination, especially during the early stages of planning. However, this increase in coordination requirements can be inconsequential when compared to the long delays that may be caused by those who oppose a proposed action because they feel that their interests and concerns have not been considered adequately in the planning process.

IMPROVING THE IMPLEMENTATION OF THE IOPP

Timing of Study Activities

In one way or another, several significant problems experienced during the SPC field test related to timing. To the extent that these timing problems can be reduced in future studies, the implementation of the IOPP would be improved.

One such timing problem resulted as a consequence of the low priority of the SPC study. Despite efforts to give the SPC study special priority because of its use as a field test of the IOPP, the study was delayed because of higher priority work within the District. For example, the initial hydrology studies, which were an essential prerequisite for a variety of other planning activities, were delayed for several months because the hydrologist assigned to the SPC study was given work that had a higher priority.

The most significant scheduling problems experienced during the SPC field test were those relating to the timing of the CIB2 and the environmental working paper. In this instance, the District's desire to gain an "expression of interest" from the City Council prior to the Districts'

"Plan Formulation Conference" (a meeting with the South Pacific Division in April, 1975), led to the recommendations of the CITCOM and the City Council in early 1975. As noted previously, these recommendations were made well in advance of the distribution of the CIB2 and the environmental working paper.

Evidence of the problems associated with the inopportune timing of the environmental working paper was given in the evaluation interviews involving the CITCOM and Pacifica City Council members. These interviews support the notion that a working paper describing the impacts of each of the alternatives under consideration can be useful in ranking alternatives. Note that problems associated with the timing of the environmental working paper are not unique to the SPC study; Randolph [1976, Chapter 5] has described timing problems involving working papers on other studies carried out by the San Francisco District. In the case of the SPC study, the inopportune timing of public input on the working paper and the CIB2 resulted in a failure to fully integrate the public involvement activities with other planning activities.

The problems in timing and scheduling mentioned above are illustrative of a broader concern, namely, the limited authority of a study manager to control the scope, direction, and timetable of a study. The usual formal methods for scheduling and coordinating study tasks may not be sufficiently flexible for IOPP-style planning. For example, before a member of the Environmental Branch can conduct a study requested by a study manager, a "disposition form" (DF) calling for the study must travel through channels to the Chief of the Environmental Branch. Upon receiving the DF, the Environmental Branch Chief assigns the work to one of his staff members and indicates the time at which the work is to be completed. Although the study manager can exert informal pressure to have the work completed in accord with his own scheduling requirements, he has limited authority to force his own scheduling priorities on the Environmental Branch Chief. This practical constraint on the study manager's ability to meet complex scheduling and coordination requirements is a significant source of difficulty in meeting the coordination requirements associated with the IOPP.

Timely Interagency Coordination

In addition to requiring more coordination between Corps planners, designers, and evaluation personnel, the IOPP also calls for more contact and coordination between Corps planners and staff members in other agencies. Although some such coordination was carried out during the SPC field test, there would have been some advantages in doing more early informal coordination than was actually accomplished. For example, the position of CALTRANS regarding their road relocation plans might have been clarified early in the study. This position eventually led to the conclusion that the bypass channel alternative was infeasible. Had CALTRANS' position been clarified earlier, both the District and various affected publics would have been able to save time and effort by not giving further consideration to the bypass channel alternative.

Another example of the potential advantage of early informal coordination concerns the position of the fish and wildlife agencies. Each of the four fish and wildlife agency representatives participating in the evaluation interviews emphasized the importance of early informal coordination and stressed the importance of being given plenty of "lead time" to respond to Corps proposals.* Moreover, one of these fish and wildlife agency representatives indicated that more informal telephone contact by the District would have enabled him to keep better informed of the progress of the SPC study.

Quite apart from the SPC study, there appears to be a rather general problem in effecting substantive interagency coordination in the early stages of planning [Randolph, 1976, Appendix B]. The use of documents like citizen information bulletins and environmental working papers can minimize such problems by providing a well organized body of information which other agencies can react to. There is evidence to suggest that the environmental working paper, as it is used by the San Francisco District, has been effective in structuring substantive interagency coordination [Randolph, 1976, Chapter 5]. Citizen information bulletins which are developed even earlier in the planning process can be very effective in this regard.

Public Involvement Activities**

The SPC field test demonstrated that the effectiveness of a public involvement program can be significantly diminished if special attention is not given to the integration of public involvement activities into the overall study. An ideal time to do this is during the preparation of the *Plan of Survey*, a document that is actually intended to serve as a guide for scheduling and managing study activities. *The Plan of Survey* provides an appropriate opportunity for answering the following types of questions, all of which are important in the design of a public involvement program: What is the best way to categorize the public? What are the information "needs" of each category of publics? What type of information input is desired from each category of publics? What is the most appropriate

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* Prior to the November 1974 meeting with the fish and wildlife agencies, interagency coordination by the District consisted primarily of letters announcing the initiation of the study, the CIB1, and a notice of the CITCOM's public workshop.

** The SPC field test yielded much information relevant to improving various techniques for public involvement; this information is given in Wagner [1975].

"media" for disseminating information to and obtaining feedback from each category of publics? How will the public input be used in guiding study activities?*

The SPC field test also demonstrated the importance of feedback from the Corps to the public. For example, an analysis of the completed CIB1 questionnaires and the comments made at the CITCOM public workshop [Wagner and Ortolano, 1974a] identified a number of questions raised by various individuals. One such question concerned the extent to which "urban debris" in the Creek was contributing to the flooding problem. Another such question concerned the extent to which water quality problems were associated with the storm sewer discharges entering SPC. The evaluation interviews disclosed that answers to these questions were not received, and respondents expressed concern that their views and ideas were not taken seriously by Corps District planners. By informing citizens of how their questions and concerns are being treated, citizens are encouraged to make contributions to subsequent portions of a study.

The evaluation interviews supported the widely held view that public involvement programs are strengthened by using a wide variety of different public involvement techniques (e.g., public meetings, workshops, CIBs). These interviews also led to a suggested strategy for use of CIBs and questionnaires.** The suggested strategy involves preparing, in the initial stage of a study, a one or two page informal brochure that informs people of a study and its goals and that employs some sort of attention getting device to generate initial interest in the study.*** Such a brochure could emphasize the "stake" people have in the study, indicate how they can participate, and describe how the information that they contribute will be used. A short, self-addressed and franked questionnaire (preferably on a postcard) could be included to allow people

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*Although the SPC Plan of Survey mentioned a local participation plan designed "to insure that local interests are kept abreast of the study and to ascertain their desires concerning possible alternative solutions," [U.S. Army-SFD, 1974] it did not provide a program of proposed public involvement activities; nor did it deal explicitly with the above mentioned questions.

**Citizen information bulletins have been used in the past by many Corps Districts. However, the way in which the CIBs were used in the SPC field test was somewhat unique in that each CIB emphasized a different planning task while at the same time providing information and soliciting public feedback on all four planning tasks.

***An example of such a brochure is one prepared by the Massachusetts Department of Public Works entitled, "What's the Future of Route 135, W. Central Street, Natick?", Boston, Massachusetts, undated.

to express their degree of interest (e.g., "interested in detailed information throughout the study and willing to provide specific feedback when requested" versus "interested only in being kept informed of the progress of the study"). This brochure and questionnaire could be widely distributed, and the responses to the questionnaire could be used to generate separate mailing lists according to the degree of interest that people have in the study. Subsequent public involvement documents could be tailored to the level of interest expressed by each group. This strategy should contribute to higher questionnaire response rates, thus making the use of the CIBs more "cost-effective."* The cost-effectiveness of CIBs might also be improved by centralizing their preparation in one section, such as the Public Affairs Office (PAO) of a District, staffed with people who are experienced in communicating with citizens and soliciting their responses. The SPC study also demonstrated that personal contact can play an important role in increasing the rate of response to CIB questionnaires. To take advantage of the benefits of personal contact, CIBs subsequent to the initial one described above could be hand delivered, and questionnaires could be picked up by local organizations (e.g., homeowners' associations and CITCOM members).**

A final suggestion for improving public involvement programs relates to the use of CITCOM's, a means of public participation that is frequently used in Corps studies. As noted in Chapter 2, the CITCOM that participated in the SPC study did not function smoothly during the early stages of the study because of confusion over its role. In future studies CITCOM's could be made to function more smoothly if early informal contacts are made between Corps planners and those who would be involved in appointing CITCOM members (e.g., a local government). Such contacts would provide an opportunity for Corps planners to describe: (1) how the Corps plans to conduct the study, including an explanation of certain activities which the Corps is required to implement (e.g., public involvement activities); (2) how public participation can aid local decision-makers in ranking study alternatives; and (3) how a CITCOM can be utilized to aid the Corps in its study. These initial contacts could provide guidance on how to select a CITCOM and the appropriate roles that a CITCOM could play. If this background information is conveyed to CITCOM members when they are initially appointed, a misunderstanding such as occurred in the SPC field test would be less likely to occur.

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*The District planners interviewed regarding the cost-effectiveness of the CIBs felt that the principal measure of effectiveness of the CIBs and questionnaires was the questionnaire response rate.

**Another personal contact technique would be to set up "information tables" strategically placed throughout a community and staffed either by District personnel or by local residents (e.g., CITCOM members) to aid in the distribution of CIBs and in the collection of questionnaires.

The Task of Formulating Alternatives

The SPC field test revealed two problems relating to the formulation of alternatives that, while they are not tied directly to the IOPP per se, are nonetheless noteworthy. One of these problems concerned the formulation of the EQ plan. The evaluation interviews with the District's SPC study personnel indicated the existence of much confusion over what constituted an EQ plan and how the EQ plan concept can be used in the analysis of impacts and the ranking of alternatives. Results from a recent survey of Corps planners by Back and Landenberger [1975] demonstrate that this confusion over the EQ plan is not unique to the San Francisco District.

A second noteworthy issue relating to the formulation of alternatives concerns the necessity for avoiding a premature narrowing of alternatives such as occurs when it is assumed that a particular alternative is within neither the study authority nor the implementing authority of the Corps. For example, had the problems associated with the underdesigned storm drains been explored with the City of Pacifica when they were identified in the early stages of the SPC study, a cooperative effort might have been arranged whereby Pacifica, with some assistance from the District, could have investigated this issue concurrently with the District's study of SPC. At the June 1975 study session, the City Council decided to investigate this issue with the intent of forming a combined sewer and flood control assessment district to meet the local costs of both the storm drain problems and a Corps project on SPC.

Interdisciplinary Planning Activities

As noted in Chapter 3, there were a number of problems experienced in using an interdisciplinary planning group in the SPC study. The productivity of such groups can be enhanced by providing group members and leaders with an exposure to various concepts that have been found useful in improving "group dynamics" and group decision-making. It might also be useful to expose group members to "brainstorming" concepts (e.g., criticism of another person's ideas is considered inappropriate in a brainstorming session). This can be especially useful to those members who are very technically oriented and who are not accustomed to dealing with unstructured problems or thinking in broad, general terms.

Among the more important issues for interdisciplinary groups is the question of how decisions are to be made in the context of the group. Although there is the need for a leader to coordinate group activities, the group cannot be expected to work effectively if the leader tends to dominate decisions. Some organizational theorists (e.g., Likert [1961] and Maier [1963] argue that for an interdisciplinary planning group to be effective, decisions need to be made by the group interacting together with the goal of arriving at consensus decisions. The extent to which group members exert influence on a decision depends on the significance of their ideas and contributions and their demonstrated competence. Likert argues that this group decision-making process should lead to decisions

that are better than those the group leader could make by interacting with each group member individually. Likert [1961, p. 170] notes that "[The group leader] helps the group develop efficient communication and influence processes which provide it with better information, more technical knowledge, more facts, and more experience for decision-making purposes than the leader alone can marshal." Without the above type of group interaction, the participation of some of the group members may be ineffective because they may feel that their views are not being seriously considered.*

Although the use of the individuals who are effective group leaders is an important consideration, it is not the only ingredient required to assure that a group will be productive. The interdisciplinary planning group concept also requires that members possess a commitment to and identification with the group; this commitment cannot develop unless it is supported by the relevant branch and section chiefs within a District's hierarchy and unless staff members are given time to work in the context of the planning group. In addition, it is also necessary to establish ground rules that govern how the group will operate, how the members will interact, and how decisions will be reached.

Inasmuch as the Corps planning process regulations [U.S. Army-OCE, 1975, p.5] require the use of interdisciplinary planning groups, some type of formal guidance is called for to help establish effective interdisciplinary planning groups. In addition, programs could be developed to train Corps personnel in interdisciplinary planning and to give them an opportunity to experience such planning in a simplified, hypothetical planning situation.** Such guidance and training could emphasize the Corps' commitment to using interdisciplinary planning groups.***

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*There is a substantial body of knowledge on the subject of small group leadership. For example, Likert [1961, p. 170 *et seq.*] notes that effective group leaders do not try to make all the decisions by themselves. They seek to minimize the influence of their hierarchical position by: listening well and patiently; giving the group members ample opportunity to express their thoughts without being constrained by the group leader's ideas; being careful never to impose a decision upon the group; and putting their own contributions in the form of questions or stating them speculatively.

**The Corps' "Value Engineering" training program could serve as a model for this effort. See Department of the Army Pamphlet 5-4-5, "Value Engineering Handbook," October, 1974.

***Such guidance and training could also encourage branch and section chiefs to consider the need for minimizing changes in study personnel and the requirements for periodic group meetings when they are scheduling the workloads of their staff members. Bass [1975] provides a number of useful suggestions for establishing and managing interdisciplinary planning groups.

As shown in this section, the SPC field test provided information that can be used to improve future applications of either the IOPP or the Corps' new planning process [U.S. Army-OCE, 1975]. In many respects, each of the many Corps studies currently (1976) being conducted using the Corps' new planning process is itself a "field test" of the new process. To the extent that these field tests are carefully monitored and evaluated, they represent a substantial source of information that can be used to make further improvements in water resources planning.

REFERENCES

Back, N.A. and E.L. Landenberger, Oct. 1975, "An Assessment of Research and Training Needs Relating to the Corps of Engineers Planning Process", unpublished report prepared for the U.S. Army Engineer Institute for Water Resources, Fort Belvoir, VA.

Bass, L.W., 1975, Management by Task Forces, A Manual on the Operation of Interdisciplinary Teams, Lomond Books, Mt. Airy, MD.

Bishop, A.B., 1969, Socio-Economic and Community Factors in Planning Urban Freeways, Report EEP-33, Dept. of Civil Engineering, Stanford University, Stanford, CA.

Borton, T.E. et al., 1970, The Susquehanna Communication-Participation Study, Selected Approaches to Public Involvement in Water Resources Planning, Report 70-6, U.S. Army Engineer Institute for Water Resources, Fort Belvoir, VA.

Likert, R., 1961, New Patterns of Management, McGraw-Hill Book Co., New York, N.Y.

Maier, N.R.F., 1963, Problem-Solving Discussions and Conferences: Leadership Methods and Skills, McGraw-Hill Book Co., New York, N.Y.

Ortolano, L., 1973, "Impact Assessment in the Water Resources Planning Process", presented at Corps of Engineers Short Course on Impact Assessment in Water Resources Planning, Orcus Island, WA., June 10-16, 1973.

Ortolano, L., 1974, "A Process for Federal Water Planning at the Field Level", Water Resources Bulletin, Vol. 10, No. 4, pp. 766-778.

Ortolano, L., 1975, Water Resources Decision Making on the Basis of the Public Interest, Report No. 75-1, U.S. Army Engineer Institute for Water Resources, Fort Belvoir, VA.

Prentice, A. and T.P. Wagner, Nov. 1974, "The Use of Qwick Qwery in the San Pedro Creek Information Program", unpublished report submitted to the U.S. Army Engineer Institute for Water Resources, Fort Belvoir, VA.

Randolph, J. and L. Ortolano, 1975, NEPA's Influence on Federal Water Planning: Part 2, Case Studies of Corps of Engineers' Planning in California, EEP Report No. 53, Department of Civil Engineering, Stanford University, Stanford, CA.

Randolph, J., March 1976, Influence of NEPA on Corps of Engineers' Water Planning in California, Ph.D. Dissertation, Department of Civil Engineering, Stanford University, Stanford, CA.

U.S. Army-OCE, 1972, "Guidelines for Assessment of Economic, Social and Environmental Effects of Civil Works Projects", Office of the Chief of Engineers, ER 1105-2-105, Washington, D.C. (15 December 1972).

U.S. Army-OCE, 1974a, "Preparation and Coordination of Environmental Statements", Office of the Chief of Engineers, ER 1105-2-507, Washington, D.C. (15 April 1974).

U.S. Army-OCE, 1974b, "Public Involvement: General Policies", Office of the Chief of Engineers, Washington, D.C. (prepared regulation dated 24 December 1974; final dated 2 April 1975).

U.S. Army-OCE, 1975, "Planning Process: Multiobjective Planning Framework", Office of the Chief of Engineers, ER 1105-2-000, Washington, D.C. (10 November 1975).

U.S. Army-SFD, 1973, "Reconnaissance Report for Flood Control on San Pedro Creek, City of Pacifica, San Mateo County, California", San Francisco District, Corps of Engineers (15 May 1973).

U.S. Army-SFD, 1974, "Detailed Project Report for Flood Control on San Pedro Creek, City of Pacifica, San Mateo County, California, Plan of Study", San Francisco District, Corps of Engineers (March 1974).

U.S. Army-SFD, 1975, "Working Paper, Environmental Evaluation of Alternatives for Flood Damage Mitigation for San Pedro Creek, City of Pacifica, San Mateo County, CA", San Francisco District, Corps of Engineers, San Francisco, CA. (30 April 1975).

U.S. Water Resources Council, 1973, "The Principles and Standards for Planning Water and Related Land Resources", Federal Register, Vol. 38, No. 174, Part III, Washington, D.C.

Wagner, T.P., Nov. 1975, Testing a Field Level Approach For Corps of Engineers Water Resources Planning, Ph.D. Dissertation, Department of Civil Engineering, Stanford University, Stanford, CA.

Wagner, T.P. and L. Ortolano, 1974a, "Analysis of Responses From the San Pedro Creek Study Questionnaire and 7 March 1974 Public Meeting", unpublished report submitted to the Corps of Engineers, San Francisco District (10 April 1974).

Wagner, T.P. and L. Ortolano, 1974b, "San Pedro Creek Study, Analysis of Telephone Follow-up Survey", unpublished report submitted to the San Francisco District, Corps of Engineers (15 April 1974).

Wagner, T.P. and L. Ortolano, 1975a, "Analysis of New Techniques for Public Involvement in Water Planning", Water Resources Bulletin, Vol. 11, No. 2, pp. 329-344.

Wagner, T.P. and L. Ortolano, 1975b, "San Pedro Creek Study, Analysis of Responses from the Second Public Brochure", unpublished report submitted to the Corps of Engineers, San Francisco District (29 April 1975).

Wagner, Thomas P.
Testing an iterative, open process for water resources planning / by Thomas P. Wagner and Leonard Ortolano. -- Fort Belvoir, Va. : U.S. Army Engineer Institute for Water Resources, 1976.
66 p. (IWR contract report ; no. 76-2)
Bibliography: p. 64-66.
1. Water resources development - Citizen participation. 2. Flood protection. 3. Iterative planning. 4. Flood warning system - Public opinion. 5. Flood control - California - San Pedro Creek. I. Title. II. Ortolano, Leonard, joint author. III. Series: U.S. Institute for Water Resources. IWR contract report no. 76-2.

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