
**ASSESSMENT OF ACCEPTABILITY AND
USE OF PROJECT STUDY PLANS**

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by

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ACRONYMS AND ABBREVIATIONS

EC	Engineer Circular
ER	Engineer Regulation
FCSA	Feasibility Cost Sharing Agreement
FR	Federal Register
HQUSACE	Headquarters, U.S. Army Corps of Engineers
IPMP	Initial Project Management Plan
IWR	Institute for Water Resources
PMCL	Planning and Management Consultants, Ltd.
PSP	Project Study Plan
RRC	Reconnaissance Review Conference
SOS	Scope of Studies

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I. INTRODUCTION

BACKGROUND

The decade of the 1980s was a period of significant change in how the U.S. Army Corps of Engineers manages and develops water resources projects. During this time efforts were under way to reduce federal spending, which for the Corps meant shifting the cost responsibility of water resources projects to non-federal interests (Shabman 1993). The Water Resources Development Act of 1986 established a formal framework for partnerships between the Corps and non-Federal project sponsors.

The advent of cost sharing brought about changes within the Corps planning process. Although the reconnaissance phase remained 100 percent funded by the Corps, funding for feasibility studies became equally split between the Corps and project sponsors. Before entering the project feasibility phase, the Corps is required to enter into a feasibility cost sharing agreement (FCSA) with the project sponsor(s).

The introduction of study cost sharing necessitated a more formal approach to project management (Kitch 1992). In 1986, EC 1105-2-162 provided guidance on the FCSA and its principal supplement, the Scope of Studies (SOS). The SOS formalized the tasks, milestones, and costs that were associated with the feasibility phase. Although similar Corps project management tools had been used in the past (e.g., plans of study), the SOS was different in that it was a document to be mutually agreed upon by the Corps and the project sponsor(s) before entering the project feasibility phase. After further refinement of the initial guidance on the FCSA and SOS, *Planning Guidance* ER 1105-2-100 was released. The new guidance had changed the name of the SOS into the Initial Project Management Plan (IPMP), which emphasized the Corps' renewed commitment to efficient project management. The 1991 *Project Management* regulation, ER 5-7-1 (FR), required IPMPs to be developed for each Civil Works feasibility study. However, aside from the information contained in ER 1105-2-100 and ER 5-7-1 (FR), no specific model of the expected contents and use of IPMPs was available at that time (Cone 1992).

In December 1994, EC 1105-2-208 was released which offered guidance on the preparation and use of *Project Study Plans* (PSPs). The name change from Initial Project Management Plan to Project Study Plan was undertaken in order to distinguish the former from the Project Management Plan that was required under ER 5-7-1 (FR) to manage civil works projects that had been found feasible. According to EC 1105-2-208, the PSP is:

... a plan of study which is used to define and manage the development and conduct of a feasibility study. The PSP documents the assumptions, work tasks, products and the level of detail that will be necessary during the feasibility study to determine the existing and the future without project conditions; formulate a range of alternatives; assess their effects; and, present a clear rationale for the

selection of water resource development plan(s).

The following contents are required in the PSP:

- Task-specific scope of studies
- Product-based Work Breakdown Structure and Responsibility Matrix
- Schedule of Performance and Milestones
- Measures/Tasks for assuring progress and quality
- Baseline Feasibility Study Cost Estimate
- Procedures and criteria to assess adequacy and conformance with existing policies
- Coordination mechanisms among internal and external parties
- References to statutes, regulations, and guidance needed to conduct the feasibility study

PSPs are to be developed in collaboration with the non-Federal project sponsor, and are to be submitted to HQUSACE with the Reconnaissance Report and draft FCSA prior to the Reconnaissance Review Conference (RRC). Accordingly, the PSP forms a basis of agreement among district personnel, sponsor(s), and Headquarters on what work is required, how and by whom the work will be accomplished, and when the work will be completed.

PURPOSE AND OBJECTIVES

The purpose of this study is to survey Corps personnel with regard to opinions and attitudes about the development and use of project study plans. More specifically, mail surveys and telephone interviews were conducted to address the following research questions:

1. What are the attitudes of the district personnel towards the PSP process? Do districts view the PSP as a good management tool?
2. How do districts develop PSPs? That is, do districts use teamwork in developing PSPs? Do attitudes affect how PSPs are developed?
3. How do districts use the PSPs during feasibility studies? Is proper and beneficial use of PSPs dependent on attitudes?
4. How does the PSP process work for Corps personnel. What works, what does not, and what can be done to improve the PSP process?

The principal objective of this research is to use the survey information to develop identified improvements in the PSP process.

ORGANIZATION OF REPORT

Chapter II of this report describes the development and implementation of the mail survey that was designed to elicit information on the value and use of PSPs. The iterative process of developing the mail survey questionnaire is discussed, as is the telephone interview approach of probing responses obtained from the mail survey. This chapter also describes the statistical methods that were used to test for and identify significant relationships among survey responses.

Chapter III presents the results of the mail survey and telephone interviews. The results and discussion of the mail survey is organized around the major survey topics. Within the discussion, the results of 35 telephone interviews are used to provide insight into mail survey responses and to highlight additional concerns and recommendations for the PSP process.

Chapter IV summarizes the significant findings of the mail survey and the telephone interviews. Chapter V concludes the report with specific recommendations concerning PSP guidance, development, and use.

Finally, technical appendices describing new frequencies of the mail survey, results of the telephone interview, and other analyses may be found in a companion volume to this report (Technical Appendices).

II. PROJECT STUDY PLANS SURVEY METHODOLOGY

MAIL SURVEY DESIGN AND IMPLEMENTATION

The development of the Project Study Plans (PSP) mail survey involved a carefully planned iterative process of comments and feedback among a variety of Corps personnel. The questionnaire development process began with an initial set of telephone interviews with district and Headquarters staff. The intent of the initial interviews was to discuss major themes that should be addressed in the mail survey and to obtain ideas for questions regarding attitudes towards PSPs and issues related to PSP development and use during the feasibility stage. Information from these interviews were condensed into an early draft (or "strawman") mail questionnaire that underwent further refinement. Through an iterative process of comments and feedback between the contractor and IWR, an appropriate set of discrete choice and open-ended survey questions were selected for the mail survey, which thoroughly captured the themes elicited during the initial telephone interviews.

A second draft of the mail survey questionnaire was administered to a small focus group of Corps personnel enrolled in the Water Resources Support Center's Program and Project Management training course. The focus group was instructed to note the start and completion time for the survey, and to make short notes of any comments on the survey on a separate form that was provided. Upon completion of the survey, each of the focus group participants expanded on their comments noted during the survey session. The focus group participants relayed valuable guidance on how to phrase particular questions, and also provided ideas for incorporating additional survey questions. The review comments of the focus group were incorporated into a final survey questionnaire, which was expected to take no more than 45 minutes to complete.

Appendix A contains a copy of the final mail survey¹. The questionnaire contains independent sections covering the following topics:

- Background and experience of the respondent
- Issues related to the development of PSPs
- Issues related to the actual use of PSPs during feasibility studies
- Personal attitudes and beliefs about the PSP requirement
- Recommendations for use of and/or guidance for PSPs

Appendix B provides a summary of the responses with all "do not know" and "not applicable" responses excluded from a raw frequency distribution. By removing do not know and not applicable responses, the frequency distributions reflect only the input of those respondents who

¹Appendix A and all other appendices may be found in the companion volume to this report, Technical Appendices.

knew how to respond.² Appendix C summarizes the responses given to open-ended questions from the mail survey.

In order to help answer the important research questions, the survey questionnaire was mailed to 467 district personnel based on a mailing list prepared by IWR. IWR compiled the list of participants in cooperation with individual districts. The mailing list targeted individuals that had experience in preparing and/or reviewing PSPs.

To ensure confidentiality, questionnaires were returned to the contractor, Planning and Management Consultants, Ltd. (PMCL). The survey contained no hidden reference that could be used to crosslist names/districts with responses. Furthermore, any questions on how to complete the form were directed to a representative of PMCL. In a small number of cases, targeted individuals passed the survey along to others who had more experience in developing PSPs.

A total of 180 completed surveys were returned to PMCL, which corresponds to a response rate of approximately 39 percent. This level is within an expected range (25 to 50 percent) of response rates for mail surveys (Dillman 1978).

METHODS OF STATISTICAL ANALYSIS

Results from the mail survey were initially analyzed descriptively through a tabulation of the frequency of responses.³ Next, the frequency distributions of the mail survey variables were examined non-parametrically using the chi-square test of independence, which tests for significant relationships between individual pairs of survey variables. Finally, correlation analysis was used to determine the direction and magnitude of significant statistical dependencies. For convenience, Appendix D provides a simple matrix that displays all of the statistically significant (bivariate) relationships between the mail survey responses. A blank cell indicates that the responses to the particular pair of questions were independent of one another (based on the 95 percent statistical confidence level). Otherwise, a positive (or negative) sign in a cell of the matrix indicates that the responses to a pair of questions are dependent and positively (or negatively) correlated.

The chi-square and correlation analyses were used to emphasize the relationship of personal attitudes and beliefs about PSPs with issues related to PSP development and use. The mail survey sample was split into two groups, a negative group and positive group, based on their

² A high percentage of do not know responses may lead to bias in the interpretation of responses to the questionnaire. Questions with a large percentage of do not know responses are reported where appropriate.

³ The majority of the survey questions involve possible answers of strongly disagree, disagree, agree, and strongly agree. In the discussions that follow, the survey results are treated more generally as if the respondents had only two choices, disagree (includes strongly disagree and disagree responses) or agree (includes strongly agree and agree responses).

general attitudes towards PSPs. The negative group contained respondents who thought PSPs were a waste of time and money. Meanwhile, the positive group contained respondents who believed PSPs were not a waste of resources. Appendix E provides summary tables that describe how the positive and negative groups differed in their response to selected questions regarding the development and use of PSPs and recommendations for change. Using the results of the analysis of negative and positive groups, a telephone interview guide was developed to elicit more information regarding the formation of negative attitudes about PSPs, as well as to probe for details on other interesting survey findings.

TELEPHONE INTERVIEW DESIGN AND IMPLEMENTATION

A follow-up telephone interview was conducted with a total of 35 mail survey respondents.⁴ The purpose of the telephone interview was to gather additional insight into PSP attitudes, the use and development of PSPs, and to clarify recommendations for improving the PSP process. The 35 respondents were selected based on their willingness to participate in an interview and on the quality of their response to open-ended questions of the mail survey.

Interviewees were queried only with regard to particular questions, depending on their individual responses to selected mail survey questions. The actual questions were designed around original mail survey questions pertaining to PSP attitudes, use, development, and recommendations for improving PSPs. In addition, all telephone interviewees were asked two additional questions. These two questions dealt with respondent experiences with PSPs and what they believed was required to develop a quality and worthwhile PSP.

After the telephone interview was conducted, a copy of the interview questions and the transcription of their responses were sent to each interviewee. The interview respondents verified the accuracy of the transcriptions and supplied written comments and corrections when necessary. Appendix F contains a copy of the telephone interview questions along with a summary of respondent comments.

⁴ The target goal of 35 interviews was determined before the formal onset of the project.

III. PROJECT STUDY PLANS SURVEY RESULTS

This chapter presents the results of the PSP mail survey and telephone interviews. The chapter addresses five primary topics, which are presented as separate sections in the chapter: (1) demographics of survey population, (2) attitudes towards PSP, (3) issues related to PSP development, (4) issues related to the use of PSPs during feasibility studies, and (5) recommendations for PSP improvement. Each section begins with a discussion of the responses to the mail survey. Then the distribution of responses to selected survey questions are analyzed for relationships with respondent attitudes towards PSPs. Themes elicited from the open-ended mail survey questions and follow-up telephone interviews are incorporated into the discussions to provide additional insight into the mail survey responses.

DEMOGRAPHICS OF SURVEY POPULATION

The survey respondents represented a mixture of Corps personnel in regard to functional responsibilities and experience with PSPs/IPMPs and feasibility studies. The majority of respondents (77 percent) are from the Corps' engineering and planning technical divisions. The remaining respondents were almost evenly divided between program/project management and real estate technical divisions. The branches with which respondents were associated ranged from appraisal to water resources, with plan formulation (14 percent) and planning (11 percent) cited most commonly. Sixty percent of the respondents have a civil engineering academic background. The academic background of other respondents ranged from agriculture engineering to statistics.

The survey respondents have considerable experience with PSPs/IPMPs. Approximately 80 percent of respondents had helped to develop or review three or more PSPs/IPMPs. Approximately 60 percent of the sample had developed or reviewed three or more PSPs/IPMPs in the last three years. Similar ranges of experience were found for those participating in the development in feasibility studies.

The most frequently mentioned role in the development of PSPs/IPMPs was technical support, followed by supervisory, review, and study and project management roles (Figure III-1). The PSPs/IPMPs that had been developed by the respondents concerned a variety of projects, including flood control (the most frequently mentioned), navigation, environmental restoration, and coastal and shoreline erosion (Figure III-2). As presented in Figure III-3, most of the respondents had received no formal training on the development of PSPs. The most frequently mentioned source of informal training was review of other PSPs/IPMPs.

Table III-1 describes the range of work experience of the survey respondents. The mean length of time of employment with the Corps was 20 years, with an average of 15 of these years involved in the conduct of planning studies. Respondents report to have been in their current positions anywhere from 1 month to nearly 26 years. The mean tenure at their current positions is approximately 7 years.

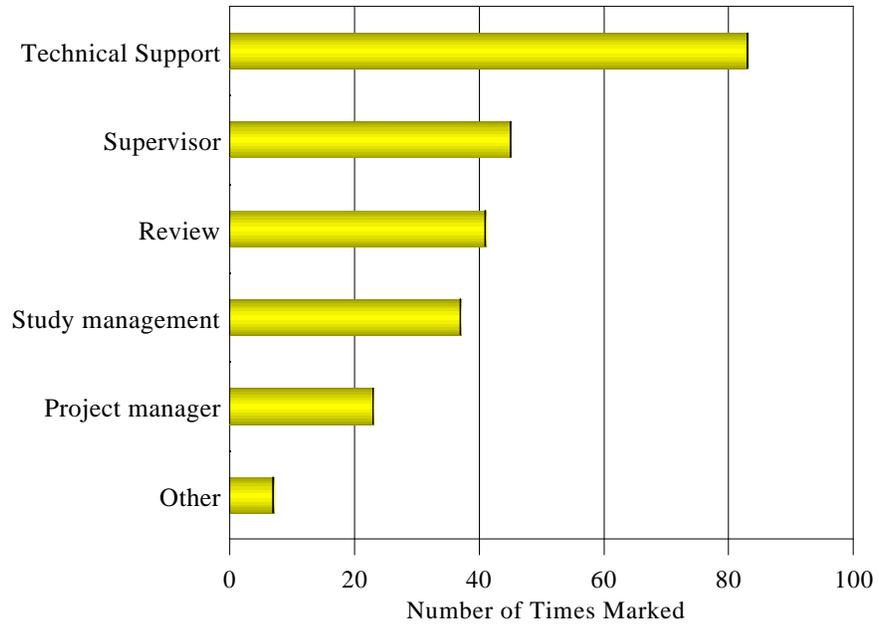


FIGURE III-1. Most Common Role in PSP/IPMP Development

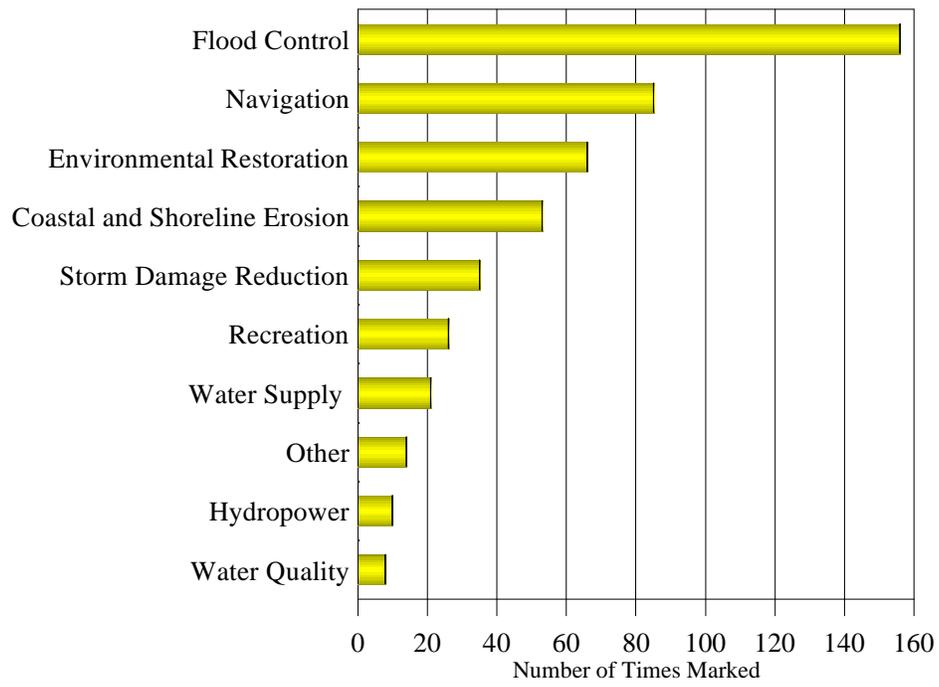


FIGURE III-2. Type of Study for which PSP/IPMP was Developed

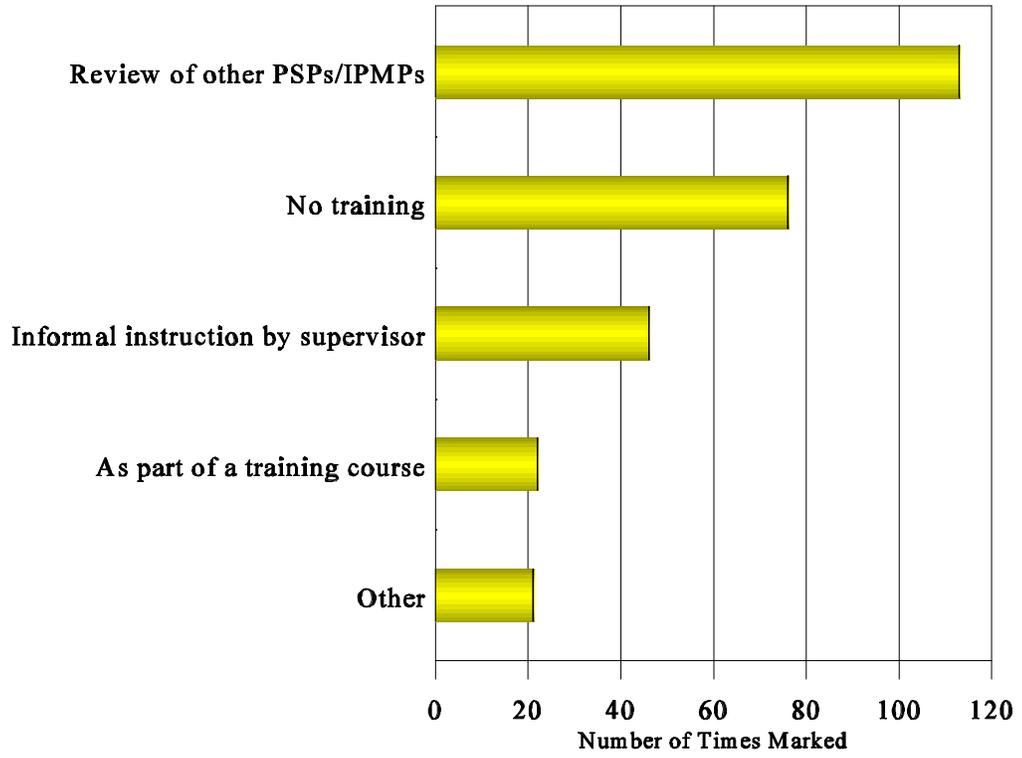


FIGURE III-3. Types of Training Received for Preparing PSPs/IPMPs

**TABLE III-1
EMPLOYMENT TIME (YEARS) IN CURRENT POSITION, CONDUCTING
PLANNING STUDIES, AND TOTAL CORPS EMPLOYMENT**

	Mean	Minimum	Maximum
Current position	7.1	0.1	25.9
Conducting planning studies	15.0	0.5	36.6
Total Corps employment	20.2	1.1	42.0

ATTITUDES TOWARD PSPS

A specific section of the survey was designed to elicit attitudes and personal beliefs regarding PSPs. Table III-2 provides a summary of the responses to selected questions in this section of the survey. The respondents generally disagreed with the statement that PSPs are a waste of time and money, both in their respective districts (69 percent disagreed) and in general (74 percent disagreed). Over two-thirds of the respondents believed that PSPs help keep feasibility studies within the specified budget and timeline. The respondents also tended to feel (71 percent agreed) that the benefits of PSPs will become more apparent with additional experience.

**TABLE III-2
SELECTED SURVEY QUESTIONS RELATED TO ATTITUDES TOWARDS PSPS**

Survey Statement	Strongly Disagree	Disagree	Agree	Strongly Agree	N
PSPs/IPMPs are a waste of time and/or money:					
a. In my District	12%	57%	22%	9%	147
b. In general	11%	63%	17%	9%	133

PSPs/IPMPS help to keep feasibility studies within the specified budget.	7%	25%	63%	5%	150

PSPs/IPMPS help to keep feasibility studies within the specified timeline.	7%	25%	63%	5%	151

The benefits of PSPs/IPMPs will become apparent with more experience.	7%	22%	62%	9%	130

In the long run, the requirement for a PSP/IPMP saves money.	11%	38%	46%	5%	119

The Corps planning process has improved as a result of the requirements for PSPs/IPMPs.	11%	35%	51%	3%	119

There is adequate knowledge of what is required and how to accomplish feasibility studies, without relying on PSPs/IPMPs.					
a. In my District	8%	36%	45%	11%	155
b. In general	6%	44%	40%	10%	129

The quality of planning studies has improved with the advent of PSPs/IPMPs.	12%	46%	39%	3%	131

PSPs/IPMPs increase accountability for schedule and budget at the direct expense of product quality.	8%	51%	31%	10%	145

The PSP/IPMP guidance requires too much detail.	4%	30%	46%	20%	141

Slightly over 50 percent of the respondents believe that PSPs save money in the long run.⁵ A similar percentage of respondents felt the Corps planning process has improved as a result of PSPs. However, those who did not believe the planning process had improved, also did not generally believe that PSPs had made the planning process any worse. Approximately 50 percent of the sample believes there is adequate knowledge in the district to accomplish feasibility studies without relying on PSPs. Only 42 percent of the sample believed the quality of planning studies had improved as a result of PSPs. A similar percentage of the respondents felt that PSPs increase schedule and budget accountability, but at the direct expense of product quality.

The majority (66 percent) of the sample believed PSP guidance requires too much detail. The micro-level tracking of cost accounts was provided as an example of excessive detail. A recommendation from the mail survey and telephone interview was to let the study size and complexity govern the level of detail required in a PSP, and then to track costs at a functional level (e.g., planning, economics, and hydraulics and hydrology) instead of an individual level.

Isolating the Effects of Attitudes

Upon further review of attitudinal responses, it became evident that those who did not believe PSPs were a waste of time or money in their district consistently had a positive view of PSPs. Conversely, negative views of PSPs were generally provided by those who thought PSPs were a waste of time and money in their district. Therefore, for further analysis, the respondents were divided into two groups. The negative group consisted of those who agreed with the statement that PSP are a waste of time in their district (i.e., the 31 percent of the sample who agreed with Question 55a from the mail survey). The positive group consisted of respondents who did not believe PSPs were a waste of time in their district.⁶

Only 8 percent of the negative group thought PSPs improved the planning process and only 12 percent thought PSPs improved planning study quality (see Appendix E, Table E-1). Furthermore, only 21 percent of the negative group believed the benefits of PSPs would become apparent with more experience. In contrast, 92 percent of the positive group believed that PSP benefits would become apparent with more experience.

Of those who have a negative view of PSPs, approximately 86 percent believed that adequate knowledge currently exists to accomplish feasibility studies without relying on PSPs in their district and in general. Conversely, less than 40 percent of the positive group indicated there was adequate knowledge to accomplish feasibility studies without relying on PSPs. Eighty-five percent of the negative group hold the belief that PSP guidance requires too much detail.

Respondents who believe that PSPs are a waste of time indicated that they did however

⁵ Note that the cost savings questions have a significant number of "don't know" responses.

⁶ Implicitly, it is assumed here that attitudes have a causal effect on the development and use of PSPs. Strictly speaking, the bivariate relationships analyzed in the frequency and correlation analyses cannot detect the direction of causality. To be sure, however, one cannot reject the hypothesis that personnel attitudes are *related* to responses given throughout the survey.

derive some value from PSPs. For example, nearly half of the negative sample believe PSPs helped to keep feasibility studies within the specified budget and timeline. Thus, this finding shows that a negative view of PSPs does not preclude their use once they are completed.

ISSUES RELATED TO PSP DEVELOPMENT

The development of PSPs was investigated from two perspectives: (1) Headquarter's role and (2) the roles of individual team members involved in developing PSPs. Headquarters has provided developmental guidance (EC-1105-2-208, and others), review, and feedback on PSPs. At the district level, PSP preparation ideally requires teamwork, where individuals provide input from their respective technical disciplines to collectively produce PSPs.

Sixty percent of the sample believe that Headquarters provides adequate guidance for developing PSPs (see Table III-3). However, only 46 percent of the sample felt that Headquarters provided consistent guidance on PSPs. Furthermore, only 32 percent of respondents believed that Headquarters provided consistent feedback upon review of PSPs. The overwhelming belief of the telephone interviewees was that PSP reviewers at Headquarters have varying opinions of what should be included in a PSP, which causes inconsistent feedback. It was also mentioned that review standards change as new PSP are submitted. The belief is that these changing standards have implicitly increased the level of detail required in a PSP. Numerous mail survey respondents and telephone interviewees mentioned that they need clarification of the current guidelines and more information on the level of detail expected in PSPs.

Ninety-eight percent of the respondents indicated that issues at the Reconnaissance Review Conference (RRC) can change the work scopes of the PSP. It became apparent from the telephone interviews that the RRC results in a refinement of the scope of the feasibility study, which then dictates changes to the PSP. Both the survey sample and the telephone interviewees generally believed that approval of a PSP should occur after the RRC. However, the RRC was viewed as a suitable forum for agreement among all parties involved in the scope of the feasibility study. When asked, the telephone interviewees were not generally in favor of developing a separate phase for PSP development, since this would increase the time frame before the feasibility study is started. Rather, they believed that a draft PSP in the form of an outline or framework for the feasibility study should be completed prior to the RRC. This would facilitate the development of the final PSP, which would incorporate issues that arise at the RRC. This approach would reduce the reworking of PSPs that currently occurs when a final copy is developed prior to the RRC. This would also increase the credibility of the Corps with the sponsor, since some respondents indicated that in the past the sponsor had agreed to a PSP only to have it change due to issues at the RRC.

An overwhelming majority of respondents (96 percent) indicated they had used previously prepared and approved PSPs as templates for new PSPs. At the same time, however, one-half of the sample did not believe sufficient time and resources were provided to prepare PSPs. Fifty-four percent of the respondents would like to see additional guidance on how to develop PSPs. Finally, 84 percent believe that PSPs are an appropriate place to incorporate district Quality Control Plans.

**TABLE III-3
SELECTED SURVEY QUESTIONS RELATED TO PSP DEVELOPMENT**

Survey Statement	Strongly Disagree	Disagree	Agree	Strongly Agree	N
Headquarter's staff provide <u>adequate</u> official guidance to develop PSPs/IPMPs.	10%	30%	56%	4%	135
Headquarter's staff provided <u>consistent</u> official guidance to develop PSPs/IPMPs.	11%	43%	44%	2%	125
Headquarter's staff provide consistent feedback upon review of PSPs/IPMPs.	12%	56%	29%	3%	111
Issues raised at the Recon Review Conference can change the work scopes of the PSP/IPMP.	1%	1%	76%	22%	157
Previously approved PSPs/IPMPs are typically used as a template for developing new PSPs/IPMPs.	1%	3%	73%	23%	163
Sufficient time and resources are provided for the preparation of PSPs/IPMPs.	15%	35%	48%	2%	162
Additional guidance is needed to help develop PSPs/IPMPs.	10%	36%	37%	17%	150
PSPs/IPMPs are an appropriate place to incorporate district Quality Control Plans.	4%	12%	65%	19%	144
I am always given an opportunity to provide meaningful input into the development of the PSP/IPMP pertaining to work I will be expected to do.	5%	17%	61%	17%	156
My review comments and concerns are normally incorporated during the development of the PSP/IPMP.	1%	5%	77%	17%	156
During the development of the PSP/IPMP, the technical experts for each discipline coordinate their efforts to ensure data required for each discipline are developed in a proper and timely manner.	5%	18%	65%	12%	168

TABLE III-4
PARTY RESPONSIBLE FOR DETERMINING REQUIRED TASKS AND
LEVEL OF EFFORT FOR EACH TECHNICAL DISCIPLINE ¹

Personnel Involved	Tasks to be Accomplished	Level of Effort Required
Study manager and technical experts	75 (42) ²	71 (41)
Technical experts for that discipline	73 (41)	68 (39)
Negotiated among team members	26 (15)	29 (17)
Other (e.g., local sponsor involved)	10 (6)	8 (5)
Study manager	9 (5)	7 (4)
Chief of planning	1 (1)	2 (1)
Sample size (n)	177	173

¹ Respondents could select more than one group.

² Percent of sample size in parentheses. Due to multiple responses, individual percentages will not add to 100 percent.

When the respondents were questioned about the individual parts of PSPs that they develop, a large majority (94 percent) believed that they knew how to develop the parts pertaining to their area(s) of expertise. Over 90 percent of respondents developed the task descriptions and budget pertaining to their expertise area. The technical experts for a discipline, and the study manager and technical experts combined, were primarily responsible for determining the tasks to be accomplished, as well as the level of effort (Table III-4). Interestingly, in reported cases where only the study manager decided the tasks to be accomplished and the level of effort, approximately two-thirds of the respondents felt the requirement for PSPs should be eliminated. In contrast, when the study manager, technical experts, and/or team members made the decisions in concert, nearly two-thirds of the respondents thought PSPs should not be eliminated.

According to the telephone interviewees, whether a PSP is developed primarily by the study manager or through a teamwork approach is driven by the personality of the study manager. The PSP development process varies from the study manager developing a framework for technical experts to follow and comment upon, to the team members developing their individual sections with the study manager serving the role of editing and compiling the technical areas into a PSP. A teamwork approach to developing PSPs was considered the best approach for obtaining total buy-in on the items and time needed to complete the feasibility study. Hence, PSP development through teamwork appears to produce a more effective PSP process.

The majority of respondents (78 percent) felt that they had been given an opportunity to provide meaningful input into the development of PSPs pertaining to work they were expected

to perform (Table II-3). Similarly, over 90 percent of respondents reported that their review comments and concerns were normally incorporated during the development of PSPs. Seventy-seven percent agreed that timely coordination and data transfer existed among the technical experts during PSP development.

The respondents provided comments about the easiest and hardest parts of PSPs/IPMPs to develop. From the open-ended mail survey comments, the scope of studies was generally the easiest part of the PSP to develop, followed by the baseline feasibility study cost estimate and the schedule. Interestingly, these three areas were also the hardest parts for many respondents to develop. However, the baseline feasibility study cost estimate and the schedule were cited more often as harder to develop than the scope of studies.

Effects of Attitudes on PSP Development

Respondents who thought PSPs were a waste of time tended to believe Headquarter's staff did not provide adequate and consistent guidance to develop PSPs (see Appendix E, Table E-2). The negative group also tended to believe (62 percent) that there were not sufficient resources or time provided to develop PSPs.

The negative and positive groups overwhelmingly agreed that issues at the RRC can affect the work scopes in a PSP. Telephone interviewees mentioned that it is a difficult task to develop a full-blown PSP at the same time the Reconnaissance report is being finalized.

Seventy-nine percent of the negative group indicated that they developed the task descriptions and budget needs of the PSP for their expertise area. Meanwhile, 94 percent of the positive group developed task descriptions and budget needs. The development of task descriptions and budget criteria for one's technical area fosters a positive attitude towards PSPs.

ISSUES RELATED TO THE USE OF PSPS DURING FEASIBILITY STUDIES

Table III-5 presents a summary of responses to selected survey questions designed to address the use of PSPs during feasibility studies. Eighty-one percent of the respondents believed PSPs help to identify potential problems during the feasibility stage. Furthermore, 72 percent of the respondents thought PSPs helped themselves and/or their districts do a better job during the feasibility stage.

Respondents also generally felt (77 percent agreed) that their district's leadership have a positive and supportive view of PSPs. Those who did not believe their district's leadership had a supportive view of PSPs attributed this to the PSP being seen only as a requirement and not as a key element in the planning process. This group also regarded PSPs as an upward reporting tool. The telephone interviewees indicated that their district leadership may also tend to place higher value on plan specifications and design memos than on the reconnaissance phase and the feasibility study. The survey respondents and telephone interviewees also generally felt that they would view PSPs more favorably if they were regarded as a dynamic document to guide the

feasibility study, rather than a static plan that does not allow for flexibility during the feasibility study.

**TABLE III-5
SELECTED QUESTIONS RELATED TO USE OF PSPS
DURING FEASIBILITY STUDIES**

Survey Statement	Strongly Disagree	Disagree	Agree	Strongly Agree	N
PSPs/IPMPs help identify potential problems that may be encountered in a feasibility study.	3%	16%	70%	11%	161
The existence of a PSP helps me and/or my district do a better job during the project feasibility stage.	6%	22%	65%	7%	141
My district's leadership (i.e., Section Chiefs and Planning Chief) have a positive and supportive view of PSPs/IPMPs.	6%	17%	68%	9%	139
PSPs/IPMPs have improved <u>coordination</u> among people assigned to work on feasibility studies.	9%	30%	52%	9%	153
Project sponsors are often confused by PSPs/IPMPs.	2%	34%	46%	18%	103
The PSP/IPMP is used to keep track of the feasibility study schedule/time line.	5%	20%	65%	10%	142
The PSP/IPMP is used to keep track of the cost of the feasibility study.	7%	28%	53%	12%	139
PSPs/IPMPs make <u>districts</u> more accountable for:					
a. Product quality	10%	46%	41%	3%	138
b. Study schedule	4%	15%	70%	11%	152
c. Study budget	4%	13%	71%	12%	151
The cost of PSPs/IPMPs are offset by savings during the feasibility study process.	21%	47%	28%	4%	92
PSPs/IPMPs have eliminated the need for work requests.	30%	60%	6%	4%	128

TABLE III-5 (Continued)
SELECTED QUESTIONS RELATED TO USE OF PSPS
DURING FEASIBILITY STUDIES

Survey Statement	Strongly Disagree	Disagree	Agree	Strongly Agree	N
PSPs/IPMPs are reviewed after the feasibility study in order to identify problems that could occur in future studies (i.e., in order to learn lessons).	22%	52%	25%	1%	116
The PSP/IPMP is used as a reference point for product/report review.	7%	27%	62%	4%	135
Because PSPs/IPMPs make explicit assumptions regarding the conduct of the feasibility study, they make it easier to get changes in the feasibility study approved	12%	51%	34%	3%	109
PSPs/IPMPs are followed closely during feasibility studies.	8%	38%	50%	4%	151

Sixty-one percent of the respondents believed that PSPs improved the coordination and communication among Corps personnel assigned to work with feasibility studies, thus fostering team-work. Similarly, over 70 percent thought coordination and communication had improved among sponsors, consultants, and other external organizations as a result of PSPs. However, telephone interviewees who did not believe that coordination and communication had improved indicated that a document such as a PSP does not guarantee communication or develop coordination. Rather, team-work makes this possible.

Sixty-four percent of the sample believed that project sponsors are often confused by PSPs. The level of technical expertise on the part of the project sponsor has an impact with their comprehension of a PSP. The use of Corps jargon, the sponsors unfamiliarity with Corps requirements, and the higher level of detail contained in a PSP were also cited as primary reasons for sponsor confusion. Education of the sponsor was mentioned as a valuable means of improving the sponsors' comprehension of the feasibility study and the requirements that the Corps must address. Also, members of one district mentioned that they write out acronyms in the PSP, thus improving the sponsors' understanding of the PSP.

The majority (75 percent) of respondents indicated that PSPs are used to keep track of the schedule/timeline during the feasibility stage. Sixty-five percent responded affirmatively that

PSPs are used to track the cost of feasibility studies.⁷ Over 80 percent of the respondents believed PSPs made districts more accountable for the study schedule and budget. At the same time, however, less than 50 percent believed that PSPs made districts and team members more accountable for product quality. Telephone interviewees mentioned that they are indeed held accountable for completing the study on schedule and within budget as outlined in the PSP, but to some degree, there is an attitude that quality-related problems can be fixed later. From the telephone interviews, frequent team meetings and sufficient funding were seen as the most important mechanisms to insure a quality feasibility study.

The majority (68 percent) of the sample did not believe that costs associated with PSP development are offset by savings during the feasibility stage. Reasons cited for this include (1) that the PSP is developed under the pretense of a requirement, but is rarely used, and (2) that the study plan changes as the feasibility study progresses. Further, it was mentioned that it is tough to recover the cost of PSP development when it costs a lot to develop (e.g., \$100,000) and the project in question is relatively small (e.g., \$2,000,000).

An overwhelming number of respondents (90 percent) did not believe that PSPs have eliminated the need for work requests. The respondents provided insight into this belief through their open-ended mail survey responses and telephone interviews. It was stated that schedule conflicts often arise among the many simultaneous projects in a district, necessitating the need for a work request. It was also mentioned that work requests are still used, because (1) traditionally they have been required, (2) studies do not evolve as planned, and (3) people often lose sight of what they agreed upon two to three years ago.

Sixty-six percent of the respondents noted that PSPs were used as a reference point for product/report review. However, only 26 percent of those responding indicated that PSPs were reviewed after completion of the feasibility study in order to identify problems that could occur in future studies (i.e., to learn lessons).

Effects of Attitudes on the Use of PSPs

Ninety-seven percent of the respondents in the negative attitude group did not think the cost of PSPs were offset by savings during the feasibility study process (see Appendix E, Table E-3). Sixty-three percent of the negative group believed that PSPs did not help the district do a better job during the feasibility stage. A similar percentage of the negative group also felt PSPs removed the flexibility that is needed during the feasibility study.

The negative group also tended to feel that PSPs did not help to cultivate a working relationship among personnel assigned to a feasibility study. Of the respondents in this group, only one-third thought communication and coordination had improved among people assigned to work on feasibility studies. Similarly, only 30 percent of the negative group thought coordination had improved among functional elements as a result of PSPs. Most (82 percent) of

⁷ This finding should be viewed cautiously, since the question had a large percentage (39 percent of the sample) of "don't know" responses.

the negative group felt that sponsors are often confused by PSPs.

As one might expect, Project Study Plans are not followed closely by respondents who think PSPs are a waste of time. The PSP is generally viewed by the negative group as a regulation rather than a study management tool. According to the telephone interviewees, when the PSP is viewed in this manner, the quality of the plan may suffer and its subsequent usefulness is diminished.

Only 14 percent of the negative group agreed that adherence to PSPs during the feasibility study reduces the number of revisions to the feasibility study. On the other hand, 60 percent of the positive group believed adherence to PSPs reduced the number of study revisions. Only 3 percent of the negative group believed that PSPs made it easier to get changes to the feasibility study approved. In contrast, 53 percent of the positive group felt PSPs helped to get changes to the feasibility study approved.

RECOMMENDATIONS FOR PSP IMPROVEMENT

Over 80 percent of the whole survey sample believed that the requirement for PSPs should be retained. However, a review of the survey responses suggests that a significant portion of the respondents support changes to the existing PSP requirements. For example, 71 percent of respondents believe that PSPs should be produced in a standard format (although some respondents noted that a standard format may not be suitable for unique projects). Eighty-two percent of the respondents believed that preparation of PSPs should occur after approval of the draft Reconnaissance Report. This would allow issues that arise at the RRC to be incorporated into the PSP and reduce the rework of PSPs that currently is occurring.

The survey participants tended to feel that approval of PSPs should occur at the district. Their reasoning was the people who develop PSPs know the product best and ultimately are responsible for it, although some respondents believe that Headquarter's approval is warranted for policy-related issues. When asked under what conditions changes to the PSP should require approval by division and/or Headquarters, increased funding requirements (e.g., 10-25% or more), policy-related issues, and increased time/schedule to complete the feasibility study (e.g., 6 months or more) were most commonly stated.

Respondents were asked about the types of assistance they would prefer to help them prepare PSPs. As Figure III-4 points out, the respondents viewed sample PSPs and a guidebook of methods to meet guidelines as the most preferred means of obtaining additional assistance. A PSP training course and more specific guidelines were also mentioned frequently.

The respondents were also asked to provide recommendations for modifying current guidelines for PSPs/IPMPs. The most common recommendation was to keep PSPs simple and require less detail. Many respondents felt that the same level of study efficiency and quality could be maintained without such an extensive summary of task responsibilities and costs. A micro-level tracking of cost accounts was not viewed as important to the conduct of the feasibility study. Other common recommendations were (1) to allow greater flexibility in developing a PSP (e.g., design PSP according to project cost and sponsor desires), (2) to provide additional and

clearer guidance (e.g., examples of current excellent PSPs and/or clear definition of PSP detail required), and (3) to standardize the plan by study type.

Effects of Attitudes on Recommendations for PSP Improvement

Sixty percent of the respondents that thought PSPs were a waste of time said the requirement for PSPs should be eliminated (see Appendix E, Table E-4). In contrast, only 5 percent of the respondents in the positive group thought the requirement for PSPs should be eliminated. In most cases though, the positive and negative groups had similar recommendations for PSP improvement. For example, both the negative and positive groups generally responded that PSPs should be produced in a standard format, and that the preparation of the PSP should occur after the draft Reconnaissance Report. The two groups also tended to agree that PSP approval should be limited to the district and kept simple with minimal detail.

IV. SUMMARY OF SIGNIFICANT FINDINGS

In general, survey respondents have a positive view of the PSP process. The vast majority (over 80 percent) of survey respondents believe PSPs are worthwhile. PSPs have helped to keep feasibility studies within a specified budget and timeline and have improved coordination and communication among Corps personnel, sponsors, consultants, and other external organizations. The general feeling among the sample is that the PSP makes districts and team members more accountable for the feasibility study schedule and budget. However, over half of the respondents felt that PSPs have not improved study quality. Greater emphasis on accountability for schedule and budget was viewed as a reason why study quality had not improved as a result of PSPs.

The level of detail that is currently required in PSPs was also a concern of the respondents from the mail survey and the telephone interviews. Micro-level tracking of costs was not viewed as beneficial for accomplishing the products of the feasibility study. Many respondents stressed that the level of detail in their PSPs was required only to satisfy the reviewer at Headquarter's, so that Headquarters could understand the project and study. Detail in a PSP solely for the benefit of the reviewer does not benefit the feasibility study. It was recommended that the size and complexity of the study could be used to guide the level of detail to include in a PSP. However, this would seem to preclude the provision of standard and consistent guidance.

The majority of respondents felt approval of PSPs should be left to the district. The rationale for this belief was that it is the district that is ultimately responsible for completing the feasibility study within time and budget allocations. They believed that Headquarter's approval should be warranted only for policy-related issues.

It became evident from the analysis that the respondents could be classified into two groups based on their negative or positive attitudes towards PSPs. When the respondents believed PSPs were a waste of time, they generally had negative views of PSPs throughout the survey. Conversely, those who did not believe PSPs were a waste of time generally had positive views of PSPs. For example, over two-thirds of the positive group and less than 20 percent of the negative group believe PSPs save money in the long run. Furthermore, approximately 80 percent of the positive group believed the Corps planning process had improved as a result of PSPs, while only 8 percent of the negative group held this belief. Similarly, the majority of the negative group thought adequate knowledge currently exists to complete feasibility studies without relying on PSPs.

PSPs are ideally developed through a teamwork approach. In fact, when the team members reportedly developed PSPs in collaboration, over two-thirds of the respondents had a favorable opinion of PSPs. When the study manager decided the tasks to be accomplished and the level of effort, over two-thirds of the respondents had a negative opinion of PSPs. Thus, a team approach for developing PSPs is vital to the acceptance of the plan and the goal of using the PSP to guide the feasibility study. Respondents indicated that there are various methods for developing PSPs through teamwork. They vary from having the study manager develop the initial framework or outline for the technical experts to follow, to the technical experts developing their individual sections and the study manager compiling and editing the sections that are developed. The method that is used appears to be driven by the personality and management

style of the study manager. Some study managers believe that the technical experts react better to a draft PSP than they do to developing a draft section for their area from scratch.

Guidance from Headquarters for developing PSPs was viewed by respondents as an area that could use improvement. According to the telephone interviewees, the need for additional guidance was not an overwhelming problem. Rather, clarification of existing guidance is needed. The current guidance lays the framework of what is required in a PSP, but does not explicitly specify the level of detail that is desirable in a PSP. Half of the sample also reported that Headquarters provides inconsistent guidance on PSPs. Also, two-thirds indicated that they had received inconsistent feedback from Headquarters upon review of PSPs. They believed that varying opinions of what should be included in a PSP is part of the problem. Changing review standards were also specified as a reason for inconsistent feedback.

The analysis indicated that the completion of PSPs after the RRC would benefit the development of PSPs, since issues at the RRC often change the scope of the feasibility study, and, as a result, change the PSP. The option of a separate phase of planning for the development of PSPs after the reconnaissance phase was not considered as beneficial for improving the planning process. The fear was the time frame for completing the process would be increased from current time requirements. Rather, a draft PSP that is prepared for discussion at the RRC is believed to be the best and most efficient way to develop a quality PSP. Issues that arise at the RRC could then be incorporated into the final PSP.

Project Study Plans have helped the vast majority of respondents to do a better job during the feasibility study. Most agree PSPs help identify potential problems that could occur during a feasibility study. For the most part, district leadership has a positive and supportive view of PSPs. Those district leaders who do not have a supportive view apparently see PSPs as a requirement and not a key part of the planning process. This group would view PSPs more favorably if they were regarded as a dynamic document to guide the feasibility study, rather than a static plan that is used to judge feasibility study performance. Feasibility studies were viewed as a discovery process, which often causes deviations from the PSP to occur as the study progresses. As such, it was emphasized that PSPs should be used as a district management tool with an explicit understanding that the PSP is a dynamic document subject to change.

PSPs were generally viewed as a tool that has helped improve the coordination and communication among parties involved with a feasibility study. At the same time, however, some believe that PSPs have no relationship to the communication and coordination among parties during the feasibility study. Rather, they believed that it is interaction among team members during forums such as meetings that forms communication channels and project coordination.

Sponsors are often confused by PSPs. The lack of technical expertise of the sponsor was mentioned as a likely source for their confusion. When a local sponsor has a low technical aptitude for the projects details, education of the sponsor is vital. The jargon the Corps uses is also part of the reason for sponsor confusion. One district in the sample has started to write-out all acronyms, and apparently have had success with this method. Lack of familiarity with Corps requirements

and the great amount of detail in PSPs were also cited as reasons for sponsors' inability to comprehend a PSP.

Although a PSP specifies each team member's role during the feasibility study, work requests are apparently still being used. Schedule conflicts and changes were primary reasons why work requests are still used. There was also a concern that the schedules of personnel assigned to other projects is not taken or is difficult to take into consideration when planning a schedule for the feasibility study. Software planning tools such as Microsoft Project[®] were mentioned to improve scheduling. Work requests are also requested by some offices seemingly as a matter of habit.

V. CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

At a fundamental level, differences in opinion regarding the benefits and costs of PSPs are philosophical. Those who believe PSPs are worthwhile tend to believe that the current guidance is adequate and actually tend to use the PSP extensively during the operation of the feasibility study. On the other hand, those who believe that PSPs are a waste of time and money tend to believe that the current guidance is inadequate and do not typically use the PSPs once they are developed. The number of years of planning experience was not a very good indicator for these opposing views. However, there was limited evidence that PSPs will be considered more valuable as more of them are developed. The lack of correlation between planning experience and positive acceptance of PSPs hints that specific (either particularly positive or particularly negative) experiences with PSPs may have influenced some of the responses.

The most important finding here has to do with coordinated input into the development of the PSP. For PSPs to be viewed positively, it is seemingly essential to involve the persons who will be responsible for elements of the feasibility study in the development of the PSP. Explicit consideration should be given to the comments, recommendations, and concerns of these individuals in formulating the PSP. The importance of team-based development for PSPs cannot be over-stressed. Finally, the sponsor should also be considered as a part of the team. It may be helpful for sponsors to develop a plan of action for the in-kind services that they provide.

RECOMMENDATIONS FOR CHANGE

The majority of respondents had favorable opinions of PSPs in general. However, there are some specific recommendations that they provided for the development and use of PSPs. An important recommendation was to limit the amount of detail that is currently contained in PSPs. Participants of the mail survey and telephone interviews generally feel that PSPs are best used as a management tool for guiding the feasibility study process rather than a specific plan to follow. Their philosophy is based on the premise that the feasibility study is a discovery process. As a study progresses and intermediate results are analyzed, deviations from the road map outlined in the PSP often need to occur. Therefore, broad-based plans of action are seen more important than the very specific items currently required by the PSP.

The study participants provided specific recommendations concerning the level of detail to include in PSPs:

- The size and complexity of the study should dictate the level of detail to include in a PSP. Relatively smaller and less complex studies may not need the same level of detail as larger or more complex studies. For example, a goal could be set that the cost of developing a PSP will not exceed a certain percentage of the estimated cost of the feasibility study.

- Cost accounting in the PSP could be set up at a functional level (e.g., planning, economics, and hydraulics and hydrology) instead of an activity-based system. A functional-based cost accounting system would better accommodate the overall objective to produce results and to complete a quality feasibility study within schedule and budget.
- Detail contained in the PSP should benefit the management of the feasibility study. Since it is the districts that manage the studies, district management (or perhaps a committee of district managers) should approve the PSP.
- Take steps to clarify in the guidance the level of detail that is required in a PSP.
- If Headquarters continues to review PSPs in the future, then the same person or persons who review the initial drafts should be involved, to the extent possible, in the review of any PSP revisions.
- Include representatives from the district and division in developing requirements for PSPs. The district and division personnel together can then provide input regarding benefits and costs of the proposed PSP requirements would have on the feasibility study.

A concerted effort needs to be undertaken to assist district personnel in developing PSPs. Personnel who are new to the PSP process are usually overwhelmed by the developmental tasks required to produce a PSP. Experienced district personnel may also be intimidated by the PSP process or may have a negative attitude toward PSPs. To overcome these limitations, the following measures are recommended:

- Personnel new to the PSP process and others having difficulty developing PSPs should be trained to understand what PSPs are, why and how they are useful, and how to develop PSPs.
- District personnel need assurance that PSPs are a management tool that is of benefit to them in the feasibility study and not just an upward reporting tool.
- Project-specific copies of excellent PSPs need to be made available at district offices as a reference for guiding PSP development. A guidebook for developing PSPs, if properly designed, would also help assist field personnel.

Since the sponsor is an integral part of the project, the sponsor must not be overlooked in the development of the PSP. The sponsor must be integrated into the development of the PSP, especially when they provide in-kind services. The Corps should also make efforts to maintain and improve their ability to communicate the plan for the feasibility study as addressed in the PSP. Specific recommendations include:

- The sponsor should develop a part of the PSP addressing any in-kind services they will provide.
- Jargon and acronyms contained in the PSP need to be clarified so sponsors with little or no technical experience are able to understand the plan for the feasibility study. For example, acronyms can be spelled out in the text of a PSP or an

acronym description guide should be made available.

- Education of the sponsor on what the PSP constitutes is critical to a successful relationship between the Corps and the local sponsor(s). This should reduce conflicts among the Corps and sponsor.

Additional discernable suggestions for improvements in the PSP process were also identified from the mail survey and telephone surveys. These recommendations for change include:

- Include the district Quality Control Plan in the PSP. Methods should be adopted to track and judge the effectiveness (i.e. quality) of feasibility studies.
- Develop mechanisms to allow changes to the PSP to be easily developed. Minor changes should only require limited documentation. More extensive documentation would be warranted only for radical deviations. The idea is to not encumber the study process with required approval of small deviations. The progress and direction of the study should be documented similar to a logbook used in scientific investigations.
- Develop or maintain mechanisms to coordinate the scheduling of simultaneous occurring projects within a district. These mechanisms would be developed with the goal of eliminating the majority of work requests.

RECOMMENDATIONS FOR FUTURE RESEARCH AND PSP IMPROVEMENT

This study has developed a foundation needed to understand how PSPs are developed, how they are used, and how current attitudes affect the PSP process. However, additional research and tools are needed to further understand and improve the PSP process and are listed below:

- Conduct a survey of personnel at Headquarters for their view of the PSP process. For example, determine what they see as deficient in the PSPs that they review and how they would improve the process. Probe for reasons why the districts might feel review standards are changing and feedback is inconsistent.
- Perform a case study to compare feasibility studies that are conducted under current PSP requirements and those conducted under alternative feasibility study management scenarios. The initial stages of the feasibility study could be assessed to determine if a less detailed PSP improves the management of the feasibility study.
- Perform a case study to assess if PSPs developed and approved by the district and local sponsor will produce an effective and efficient feasibility study. In other words, try to determine and estimate the economic benefits (or costs) of preparing and using the PSP.
- Develop a training course and education materials for district personnel to use as

tools for developing PSPs. A guidebook of methods to develop PSPs could be developed from a review of existing PSPs.

- Survey local sponsors to understand what they view as problems with the way feasibility studies are managed and how PSPs are perceived from their standpoint.

The conclusions and recommendations addressed in this chapter provide an understanding of the current status of PSPs in the Corps planning process. Specific items outlined above provide the rationale needed to make identified improvements to PSPs. Future research, if undertaken, should help to further the Corps understanding of the benefits and costs of PSPs, within the context of improving the entire Corps planning process.

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