

9310592 (2)  
DD AAF-214-131  
Phase I + II

Attachment B

7p

SUMMARY PROGRESS STATEMENT  
ONGOING PROJECTS

Funding	
FY 76	195
IQ	48
77	641
77-80	2,096
	2,978

Project # 560-

Project Title Health & Nutrition Benefits-Improving Water Supplies

Contractor a) RSSA-BURJEN

b) \_\_\_\_\_

Project Manager: HRice (Interim Mgr.)

Countries involved: Brazil

I. Implementation Progress

Approved at the May 8-9, 1975, RAC meeting, the PIO/T was initiated and forwarded to TA/PPU mid-May. Funds did not become available until July 1, 1975 or Fiscal Year 1976. Work is now underway.

Outputs

Progress to Date & Relationship to Project Purpose and Goal

(1) A protocol to assess Health and Nutrition benefits to be derived from an improved water supply system in an LDC	(1) Project proposal for assessing Health and Nutrition benefits from improved water supply system prepared under small research grant  (2) Project approved by RAC  (3) Work initiated on developing protocol
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II. Project on Schedule; Life-of-Project Budget Accurate?

The Phase I is underway. If in Phase I the project proves feasible the methodology developed could with adaptation be applied elsewhere.

III. Significant Change(s) in Project Proposed?

Not at this time.

IV. Role of TA Technical Office; Mondays required

The mandays estimated for this project are 45.

8/24/75  
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revised by Amy Bess  
8/18/75

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## INTRODUCTION AND NARRATIVE SUMMARY

National and international agencies have long made water supply investments in less developed countries on the faith that these investments return substantial extra-financial and nonquantifiable benefits to individuals affected and to society at large. The benefits are most often thought to lie in the field of public health. The faith is based partially on theories of the ways disease is transmitted and partially on speculation of the value of improvements in health. The theories have been subjected to little well-designed research and remain largely untested. Valuation of the benefits remains speculative due to uncertainty of just what the benefits are and a lack of consensus on a methodology of valuation. This project will address the latter question devising a protocol (research design) which may be used to execute a major scientific prospective study which will test the impact of water supplies on the health and nutrition status of a target population.

In view of the widespread belief of the crucial importance of improved water supply in control of diarrheal disease, the substantial investments made by national and international agencies based on that belief, further research on the subject is needed on both a broader and a narrower approach than has been taken in the past.

A study approach should be broad in that it recognizes that contaminated water is not the sole factor in diarrheal disease. Other factors, particularly cultural habits of hygiene and nutritional status, play important parts. The approach should be narrow in that it recognizes that not all individuals in a community are equally at risk to diarrhea or to its more serious consequences. The incidence and fatality of diarrhea is highly concentrated in pre-school, particularly weanling children. The eventual study to be undertaken will specifically investigate the role of water in diarrheal disease among young children, recognizing diarrhea's complex etiology, particularly its alleged synergism with nutrition and its sensitivity to household hygienic practices.

The study will take advantage of the opportunity for research in Minas Gerais, Brazil, where one entity, supervised by the World Bank, will make multiple investments to initiate or improve water supply systems in communities of various sizes over several years, and where cooperation of the entity and the relevant health authorities is assured.

### 2. Purpose and Products

A. The main purpose of this feasibility study is to design and pretest a research protocol which will be used to study the health and nutrition impact of new or improved water supplies on low-income families in developing countries. Intrinsic to this study is the

*Drafted  
D. Keene*

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requirement that scientifically acceptable research tools; survey instruments, methods, techniques, sampling and statistical approaches, data collection, processing and analysis systems and appropriate indicators will be devised and created for use in testing a set of hypotheses which will be applicable to a variety of settings and situations in developing countries around the world.

B. The ultimate goal of this research is to provide investors and foreign assistance agencies with evaluative and planning guidance to use in making judgements and decisions in the water supply segment of the public utilities sector. For example, investors and donors would prefer to base their approval decisions on the following type of criteria provided by this study.

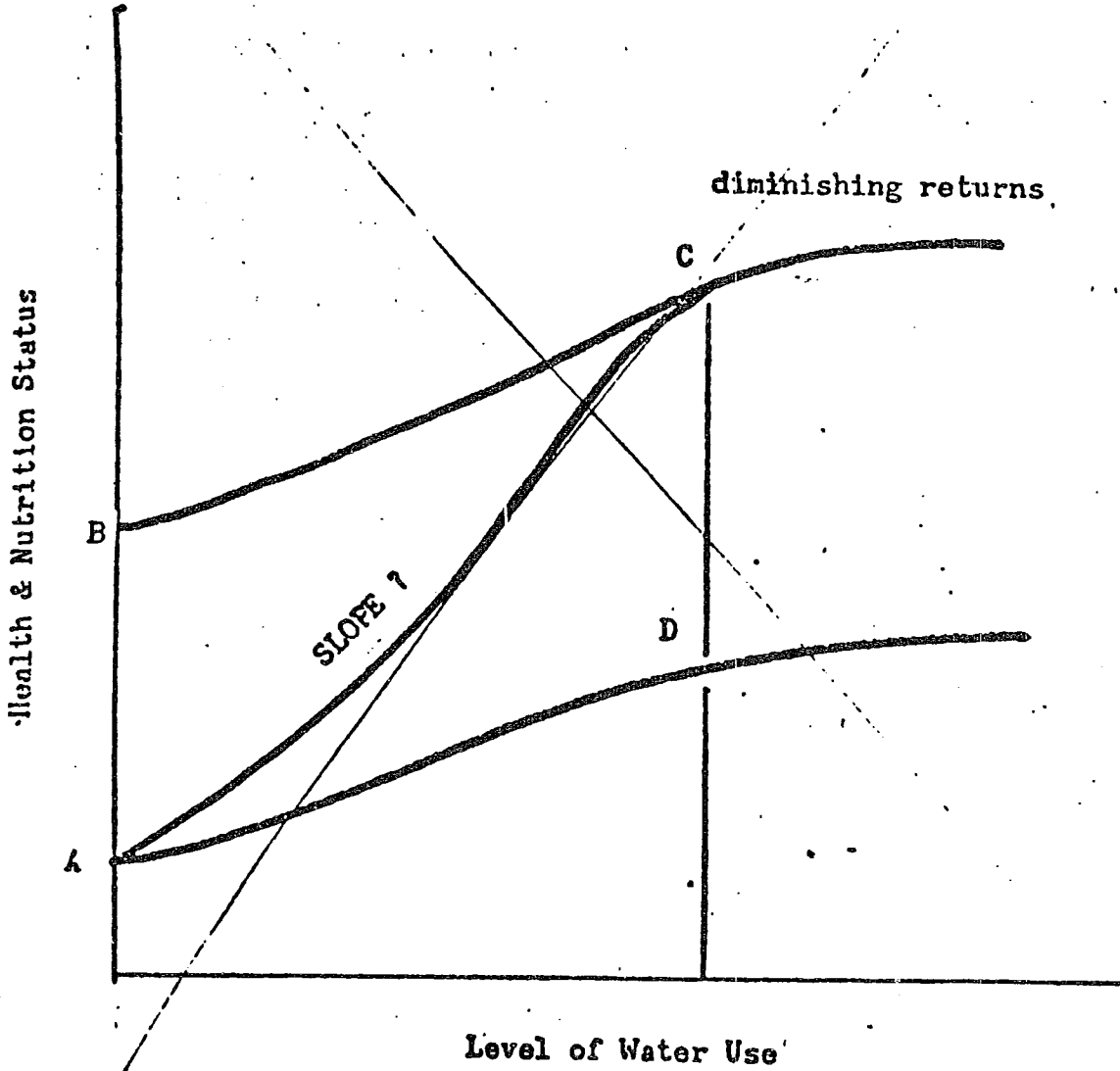
1. Priority ranking of a particular site at a particular time.
2. Choice of a particular public utilities loan project as an alternative to other (similar fiscal-level) social or economic development projects (opportunity cost).
3. Preconditions required to guarantee reasonable success of the project according to an established project set of indicators i.e. what prerequisite or accompanying "package" or level of achievement will yield optimum results.

The essence of this proposed research is depicted in the graph shown on page 4 in which social benefits (health and nutrition status) are related to input or investment level of water use. Note Y-intercept points at A and B refer to differential levels of initial or baseline health or nutrition conditions which may improve gradually (curve AD) or rapidly (curve AC) with increasing water use. The points of inflection C and D represent ratios of diminishing output returns for increasing investment. The feasibility study will fix baseline data and provide the instruments for determining the shape of the curve and make it possible to eventually fix the inflection points.

### C. Worldwide Applicability

The investment guidance provided by the results of this research project will be useful to the International Assistance Community and the methodology will be designed so that the standardized methods, tools, instruments, procedures, criteria, definitions and indicators will be generally applicable worldwide. This project is a multilateral collaborative effort between AID, World Bank and other U. S. Agencies with strong interest and guidance from the voluntary and private sectors as well.

Production Curves Relating Benefits to Water Use (after White, Bradley, White)



Informal Minutes of Research and Development Committee Meeting  
Held on March 18, 1975

Project: Feasibility Study for Health and Nutrition Benefits of  
New or Improved Water Supplies (new), 1 year, \$195,612

Contractor: Bureau of the Census

Project Manager: Dr. J. P. Keeve, TA/N

Discussion Highlights:

Dr. Long referenced the R & DC review of this project on February 11, 1975. Issues raised in that discussion have been incorporated into this Project Statement and further revision is in process for presentation to the RAC. He emphasized that this proposal is only for the feasibility study and that there is no implication of commitment for follow on work.

John Rixse, SER/ENGR, stated that the issues had been taken care of. Art Silver, LA/DP and Maura Brackett, LA/DR, asked about the prior discussion of other indicators related to health. Jack Keeve stated that this consideration has been incorporated into the design structure for both longitudinal and cross sectional measurements. Art Silver raised the question about an emphasis on urban systems which would bias results away from broad LDC applicability. Dr. Keeve commented on the demographer's use of urban as misleading. This project is designed to provide information on rural communities. Erv Long suggested that there was a need to stratify the sampling of communities to emphasize the smaller centers.

John Eriksson, PPC/PDA, stated that their reviewers found the presentation and design to be excellent.

Maura Brackett asked about applicability to other countries. Dr. Keeve stated that this was the intention of the design and feasibility study. The World Bank is concerned with broader utilization of this work. Their review committee has expressed a favorable response to the design and will provide their comments, possibly before the RAC review schedule. Dr. Long suggested the desirability of scheduling a conference on appropriate methodology involving Census and A.I.D. representatives early in the project development activities. Dr. Keeve indicated that such an advisory committee is already selected and operating.

Planning for utilization was stressed: in the project statement, as a charge to the feasibility effort to explicitly detail, and to the continual planning effort.

Motion to approve the proposal was made by Philip Sperling, seconded by Lane Holdcroft, and unanimously approved by voice vote.

Phil Sperling, SER/IT, commented on the importance of systematic "development of indicators". He doubted the probability of getting sufficient data for all of the cells in the complex design. He referenced the IRRRI experience in trying to measure bias in user reactions. Dr. Howard stated that there is need for many health and water measures before an interviewing approach. Dr. Stockard pointed out that there is opportunity in this large schedule of implementation to establish baseline measures for time phased comparisons. Dr. Keeve stated that these installations would be made in communities which do not have formal water systems, thus significant contrasts are possible.

Dr. E. B. Cross, AFR/DS, expressed doubt that there was adequate expertise available for the design, and that there needed to be more focus on other complicating design variables. Dr. Long stated that the methodology must be clear on what and how the work was to be done. Further, that this was to be regarded as a discrete study which did not necessarily imply a follow-on. Dr. Keeve indicated that many of these questions were understood to be objectives of this design phase, and that no other experts were known to be available.

Dr. Long summarized the expressed need for better definition of the complex variables and the proposed investigation. He indicated that he anticipated a similar reaction from the RAC. This poses the problem of how best to improve the clarity of the presentation. Maura Brackett stated that the problem was too important to chance a turndown by the RAC. Dr. Long suggested that an approach through the Small Research Project Program might be appropriate to improve the project formulation, and that this level of support would be equivalent in this fiscal year to any other approach. A revised presentation could then be scheduled for the RAC meeting in May.

A revised proposal would be brought back to the R & DC for further review.

TA/RIG:WSchaefer

Informal Minutes of Research and Development Committee Meeting  
Held March 11, 1975

Project: Feasibility Study for Health and Nutrition Benefits of  
New or Improved Water Supplies (New) One year, \$195,612

Contractor: Bureau of Census

Project Manager: Dr. J. P. Keeve, TA/N

Discussion Highlights:

This project proposes a feasibility study for a long-term prospective field study of pre-school children to determine the benefits expected from increments in the quantity of water supply and additional inputs needed to enhance nutrition and health. A memorandum from Carl Fritz to R & DC members, dated February 10, 1975, discussed this Phase I effort for the total proposed 6 year, \$2,700,000 proposal. Brazil has been selected as a test site to make use of an IBRD loan for the installation of 200 water systems, a unique opportunity for systematic investigation of impact. Dr. Keeve outlined the rationale, design, and extensive coordination in planning which has been accomplished.

Frank Moore expressed his concern for the cost for testing the hypotheses stated as compared with other needs for research. John Neave, SER/ENGR, asked, if the results were available today, how would they help answer practical loan questions in Chile, Thailand, Indonesia? While generally favorable to the need for knowledge, how does the emphasis on quantity relate to quality?

Dr. Lee Howard spoke about an apparent confusion of objectives. The World Bank doesn't need a justification in terms of health to support water system loans. There is a need for knowledge about the complex of factors including quality of water and endemic disease situation for broad planning purposes. Erv Long pointed out that the presupposition of acceptable quality tends to ignore other factors, such as quantity and accessibility.

Maura Brackett, LA/DR, asked what had been learned about the Guatemala project as relevant to this proposal? Dr. Keeve pointed out that there is need for large samples to get statistically significant results on many comparisons, particularly to control for other complicating factors. This requires a complex design, careful attention to sampling, and a long time, two years for immediate results, five years for firm generalizations.