DRAFT

EVALUATION

SMALL RURAL WATER SYSTEMS

IN YEMEN

PROJECT 279-0044

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GLOSSARY

PID	Project Information Document
RWSD	Rural Water Supply Department
PVO	Private Volunteer Organization
CRS	Catholic Relief Services
AID	Agency for International Development
NEAC	Near East Advisory Council
PCVs	Peace Corps Volunteers
YARG	Yemen Arab Republic Government
MPW	Ministry of Public Works
AID/W	AID/Washington
USAID	United States Agency for International Development (country operation)
USAID/Y	USAID/Yemen
turn-key	One firm doing design, construction and turning over the completed facility to the government. Literally turning the key to the house over.
Host government	YARG
OPG	Operational Program Grant
TC	TransCentury Foundation (contractor)
COP	Chief of Party for TransCentury
CA	Cooperative Agreement
GD	General Development (office under which project comes in USAID/Y)
Mission	USAID/Y
CPO	Central Planning Organization
RC	Reinforced concrete

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY.

The first scheduled evaluation of the Small Rural Water Project (279-0044) took place February 1-24, 1982. Major points covered were whether progress toward objectives has been satisfactory, the ability of TransCentury to organize and administer a technical project, whether USAID should continue to be involved in implementing these small rural water projects and if so, whether this is the correct mode of implementation.

The evaluation found the following:

1. Since initiation of subproject implementation in August 1981, the project is making satisfactory progress toward its goals.

2. With the supervision and management of a qualified engineer serving as permanent Chief of Party, TransCentury is capable of implementing this project.

3. Construction of small rural water projects is a good vehicle for training RWD technicians in improved methods of construction and supervision. It is this training aspect which ultimately justifies continuing the project as is since in the long-run it will enable the RWD/MPW to supervise implementation of numerous projects and to upgrade their quality.

The main recommendations of the evaluation are the following:

1. Funding for the project should be continued until end of FY 84 if TransCentury can successfully recruit a permanent Chief of Party and comply with other initial recommendations contained in this evaluation document. The contractor must have a well-qualified Chief of Party in Yemen by June 30, 1982. If this condition is not met, project should be terminated.

2. Continuation of the project will also be contingent on the MPW providing a full-time counterpart for the project by June 30, 1982.

A. Findings and Recommendations.

This evaluation focussed on the following three questions:

1. Has progress toward project objectives been satisfactory?

2. Is TransCentury capable of organizing and administering a technical project of this nature?

3. Should USAID continue to be involved in implementing small rural water projects and, if so, are there more efficient ways to do so?

The first question - On the whole, the evaluators believe that the project is making satisfactory progress toward its first objective. The start-up delays must be viewed in the larger context of Yemen, where all AID contractors have faced similar delays. The number of subprojects appears to have been over-estimated, and should be revised downward, from 140 to 100 during both phases. TransCentury estimates that 55 subprojects will be completed during Phase I.

The second objective of institutionalization needs some revision. The evaluators found that in-depth institution-building at higher levels of the Rural Water Department (RWD) does not seem appropriate at this time. While we recommend that efforts to identify three or four persons for long-term training continue, the main thrust of the institution-building should focus on training and skill development for RWD technicians. The main objective is to create a cadre of technicians within the Municipality of Public Works (MPW) who are qualified to supervise local subcontractors and maintain an acceptable level of work, which is the type of operation the RWD is now becoming involved in. TransCentury has already made a good start in this direction and is to be commended on these efforts.

The second question asked by this evaluation was whether TransCentury is capable of organizing and administering a technical project of this nature. The comments of the USAID engineer speak to this point:

It has been discussed that TransCentury is not technically oriented. So this project may be in the wrong hands. However, the current work is outstanding under difficult logistic conditions. Much more technically sophisticated firms in Yemen have not done any better with their start-up costs and overall production. And USAID has changed contractors before on other projects with no great advantage having resulted.

TransCentury has a top notch crew put together. Only the MPW's best potential technicians should be receiving on-the-job training with it. The project and subproject costing being done by TransCentury is excellent for teaching even to the MPW officials. Management techniques offered by TransCentury up to now are well worth observance by the MPW.

Good work even it is more costly in its capital phase virtually always pays on construction projects. When water is involved, maintenance of poor work can become very costly. For the most part, TransCentury is designing and constructing systems which should last 40 years with little maintenance. The same is true for the AID-funded and built 18-year old Kennedy water project which has not had the knowledgeable personnel to maintain it well but which is still cost effective in its O&M. American quality must be maintained for the future. The designs allow potentials such as water treatment and wastewater handling. American quality also teaches.

TransCentury has created a detailed schedule of work and has been able to follow it for five months. Much of good construction management depends on using such a schedule and reporting to those who can help when variances impair it.

With guidance from a senior design engineer, the design crew is sufficiently knowledgeable, well-adjusted, and able to produce designs for most any kind of water related project in Yemen.

The construction crews, including the choicest of local subcontractors have shown an excellent ability to construct the designed projects. A construction manager heading the team can efficiently and cost effectively construct almost any water related project in Yemen within the size range of the limited crew.

More Peace Corps workers with TransCentury feel they are making the contribution for which they volunteered, than on any other project in Yemen.

In summary, given the caveat that a qualified Chief of Party is essential to the continued progress of this project, the evaluators found that TransCentury has solved its start-up problems, has established good working relationships with RWD, and has instituted a very good work flow allowing for efficient use of its team and good production output.

The third point raised during this evaluation was whether USAID should continue to be involved in implementing small rural water projects, and if so are there more efficient ways to do so?

Domestic water supply has improved measurably in rural Yemen over the past 10 years, but one can still see the contrast between the old and new ways in the highland and Tihama areas. The old process of drawing water from streams, spring or hand dug wells and transporting it to the home is both time-consuming and physically difficult. This process can take anywhere from two to three hours work each day. Our studies have shown that village people prefer a modernized water system which could include tube well, diesel pumps, elevated water storage, and source-to-residence distribution system. Increased family earnings and government assistance over the past five-six years have allowed these improvements to take place. However, the technical "know-how" is lacking in rural villages and government services are not well enough established at the local level to assist in the modernization process.

Project 044 has addressed the problem of assisting rural people to improve their water supply basically through the provision of technical assistance, training and commodities. The demands for improved water systems remain greater than the ability of both the government and the village people. The needs for training and technical improvements in government and at the village level are still considerable. We estimate that it would require at least five years of efforts to bring significant change to this situation.

Our study of the effects of Project 044 on this problem indicate the following:

- The project is providing better water systems than the people alone could provide.

- These improved systems will outlast the others because there is much greater quality control in construction, systems are better designed, local people are trained in construction techniques and first line maintenance.

- Though the project systems are more costly in the short-run, the increased costs provide a longer lasting system (if maintained), saving money in the long-term.

- Our evaluation of the completed projects indicate that local participation in labor and kind was both forthcoming and adequate and that the people are receptive to on-the-job training.

A second consideration is political visibility. The Yemen Arab Republic Government (YARG) at present has a very difficult time extending its services to remote rural areas. Reasons for this are numerous but include lack of staff, difficult accessibility, limited funds. This lack of government response is causing serious disaffection in rural areas leading in at least some cases to internal rebellion. USAID, by assisting in some of these remote areas, is giving much needed political support to the MPW and a stabilizing effect to the central government.

The answer to the question of whether USAID should continue to assist in rural water system installation is yes. The answer to the question of whether USAID can continue in such projects is a policy issue, ultimately determined by AID/Washington. Village water system development is a major concern of the YARG and has received considerable attention in their new Five-Year Plan. The FY 82 CDSS has as a goal, increasing access of rural peoples to services and encouraging local initiatives. This project is one of few in Yemen which has a direct impact on the most disadvantaged local people and delivers an immediate improvement in their quality of life.

The answer or options to the question of "is there a better and less costly way to deliver these services to the village" relates to the following considerations:

Option 1: (A modified FAR). Redesign the project to provide less technical assistance (reduce staff by 50%) to the design and construction phases of the project. Require RWD to take a more active part in technical supervision by assigning RWD technicians to the village site, without daily support (both technical and supervisor) from the project. Provide a grant block of money through the project to the RWD to finance the direct costs of the subproject under the control of the RWD. The project technician and supervisor, on a periodic basis, then visits the village site and provides direction to the RWD technician on site. This approach was tried on the past AID project 022 with unsatisfactory results. It was found that (a) the RWD technician did not stay on site and many days went by without any technical supervision of village workers building the system; (b) the simplest system requiring three months of work was taking six to nine months to complete, if at all; (c) materials supplied to the village disappeared or were not efficiently used; (d) financial accounting procedures were not complete and satisfactory; (e) the RWD bureaucracy was three times worse than PVO implementation. This option is not recommended at this time. If the MPW/RWD had a viable organization, the above should be tried once again.

Option 2: Change PVO Contractor. Not recommended on this project. It would be more sensible to terminate the project than consider this option. TransCentury had serious start-up problems, but now appears to have solved these. TransCentury has a viable and excellent field staff on site and gains more experience each day, but momentarily lacks an experienced, technically trained Chief of Party. TransCentury has now established good working relationships with the MPW. The project is moving and meeting the FY 82 Implementation Schedule target dates. The issue of a

qualified Chief of Party on site is serious enough to warrant termination of the project if this position is not satisfactorily filled by June 30, 1982. However, giving the project to another PVO would only recommence many of these problems and, in the opinion of the evaluators, would not offer enough advantages to offset the problems.

Option 3: Terminate the project with the RWD/MPW and shift the funding resources to the AID-funded 045 project, Rural Development under CYDA/LDA.

This is not recommended. The MPW/RWD has a government direct responsibility, as a Technical Ministry and Department, to provide technical assistance and funds for the development, construction and follow-on maintenance of village water systems in Yemen. Traditionally, one would find this same "charge" in MPW's around the world. The CYDA/LDA do not have a technical capacity or such a "charge" and should not be encouraged to duplicate these services, given the lack of trained personnel in the YARG. For village water system installation and technical institutionalization, this project is centered with the right YARG government agency and should so remain with the RWD.

Option 4: Terminate project June 30, 1982. Not recommended in view of evaluation findings.

During the past five months, TransCentury has demonstrated that with good leadership from a well-qualified engineer, they are capable of implementing this project. The evaluators, therefore, recommend that the project be continued, subject to TransCentury recruitment of a qualified Chief of Party by June 30, 1982.

Option 5: Subject to resolution of several weak areas of project operation, collaboration and management, fund the project through end of FY 84. Specifically, the following points must be addressed:

a. TransCentury must have a qualified Chief of Party on site by June 30, 1982.

b. RWD must assign a full-time counterpart to the project on or before June 30, 1982.

c. The RWD must assign five technicians to the project on a rotating basis.

d. Subproject sites must be assigned to TransCentury in groups of minimum of 10.

e. The project operation should move the new RWD offices near the USAID camp.

f. Village site selection should utilize existing WHO, RWD designs, be based on higher village populations (averaging 800-900) and concentrate on less costly simpler systems.

g. Project operations should be reviewed with RWD/MPW/ TransCentury/USAID every six months on a formal basis.

If specific deadlines are not met, project should be terminated at the end of FY 82.

1. Finding.

The lack of a full-time qualified team leader on site for TransCentury since November 1981 has resulted in project implementation delays and loss of interactions with the RWD and USAID. It is expected that the project will lose its present momentum if a permanent team leader is not on site within the next three months.

Recommendation:

If TransCentury fails to assign a permanent Chief of Party to the site by June 30, 1982 or take actions related to project management, as may be directed by and satisfactory to AID, it is recommended that the project be terminated not later than September 30, 1982.

2. Finding.

The Memorandum of Understanding, dated July 9, 1980 between MPW/CPO/AID under Section E, Contributions of the YAR, states "RWD will assign a project manager to the project who will serve as counterpart to TransCentury's Team Leader".

Recommendation:

Because the RWD/MPW has not fulfilled, to date, this requirement for the project and because the lack of a full-time RWD counterpart assigned to the project has resulted in delays and additional costs to the project of certain project implementation activities, it is recommended that the RWD/MPW assign a full-time technically qualified counterpart project manager to the project not later than the end of the third quarter of FY 82 (June 30, 1982). If RWD fails to make this assignment or fails to provide evidence satisfactory to USAID that the assignment is forthcoming, USAID will move to terminate the project at the end of FY 82 (September 30, 1982).

3. Finding.

Under the Cooperative Agreement for the Project's Program Description, Attachment 1, paragraph B-1, it states that within 36 months of the signing of the agreement 80 subprojects will be completed.

Recommendation:

In consideration that the agreement was signed on July 28, 1980 between AID and TransCentury but that the RWD/MPW did not assign to TransCentury subproject site until April 22, 1981, with construction starting in mid-August 1981, it is recommended that the paragraph be changed to read:

> It is expected that by the end of the project FY 84 (September 30, 1984) 55 subprojects will be completed over a 36-month period beginning with subproject construction activities in August 1981.

4. Finding.

Under the Letter of Agreement between TransCentury and the MPW, dated January 20, 1981, it is recommended that the following changes be made.

Recommendations:

Article III, Specific Objectives.

Change "approximately 140 rural villages" to 55 rural villages selected for assistance up through FY 84.

Article IV, Project Staffing.

Change "TransCentury will provide a team of four long-term advisors for this project" to "TransCentury will provide a team of five long-term advisors for this project". Add the position of Deputy Team Leader/Executive Officer.

Delete 14 trail bikes, add four additional field vehicles for a total of 12 field vehicles and one motorcycles

5. Finding.

As each rural water system is installed, the potential for standing water and wastewater accumulation is increased. This is serious in all regions of Yemen where either malaria or schistosomiasis are important water-borne diseases.

Recommendation:

TransCentury must recruit no later than August 1982, either an experienced sanitary engineer or an environmental health engineer to develop or design a simple, cost effective wastewater disposal and water use health plan to insure sanitary use and non-pollution. This design will be incorporated into subproject, water system design for each of the 55 subprojects.

6. Finding.

The villages with completed water systems appear to be continuing to use water in traditional ways. Since the quality and quantity of water available has been improved, these villages should be educated in proper water usage, both to prevent poor sanitary conditions from developing and to improve health conditions.

Recommendation:

USAID will request the Ministry of Health to appoint a person from each village, or cluster of villages, to be trained as a primary health care worker within the coming year. (The MOH has already agreed to this informally).

The logframe should be revised to reflect this, and output (d) should be deleted.

7. Finding.

An original output of the project was to provide the means for institutionalization of the project with RWD. Experience has shown that the RWD does not yet recognize a need to improve its own capabilities at its highest levels, nor does TransCentury have the personnel to influence such a decision.

Recommendation:

This output should be reworded to read:

> To create a cadre of technicians within RWD capable of supervising construction work and maintaining acceptable standards of construction.

8. Finding.

The assignment of subprojects site to TransCentury by the RWD has in the past contributed considerable delays and non-productive costs to the project. Additionally, subproject site assignments by RWD has resulted, in some cases, of low population villages ($<$ 250) being selected for a system installation with the inherent high ($>$ \$150) per capita costs.

Recommendation:

That RWD assign at one time, not less than 10 subproject sites for possible village system installation to TransCentury, in an approximate geographical area, accessible by vehicle. From this, TransCentury can make preliminary surveys and recommend those sites for system installation having optimum population and per capita cost effectiveness. This is recommended because AID funding resources have limitations.

9. Finding.

Subproject agreements should identify someone to be trained in maintenance and repair of system.

Recommendation:

The Village Agreement included a statement as to how the follow-on maintenance of the system will be covered. In those cases where the local LDA does not have a follow-on maintenance capability, the agreement will require the village to identify a village person to be trained during the project construction for system repair and maintenance.

10. Finding.

The logframe states (under outputs) that the contractor should conduct feasibility surveys including basic socio-economic data. Although TransCentury has done a preconstruction survey for each subproject and submitted reports, these have not included socio-economic data of any depth. There is no one on the TransCentury staff with background in this area, nor are these data of direct relevance to constructing water systems.

Recommendation:

In the interests of keeping costs as low as possible, the evaluators recommend that the socio-economic data requirement be deleted.

11. Finding.

The Cooperative Agreement, paragraph D.1., Reporting, of Attachment 1, requests TransCentury to submit a semi-annual progress report of project activities. The actual reporting for project activities is being done on a monthly and quarterly basis.

Recommendation:

It is recommended that paragraph D.1. be changed to reflect actual reporting procedures.

12. Finding.

The AID/TransCentury Cooperative Agreement, paragraph C, Implementation, 2.K of Attachment 1 calls for TransCentury to "establish a coordinating committee to coordinate activities among all donors".

Recommendation:

This requirement by TransCentury is considered to be outside the scope of the TransCentury services for this project. It is recommended that this paragraph be deleted from the Cooperative Agreement.

13. Finding.

The evaluation has identified four points which are critical to project success:

a. A permanent Chief of Party must be assigned by June 30, 1982.

b. A review of project progress and subproject construction six months after this evaluation should show it is substantially on schedule.

c. The second scheduled in-house project review (June 1983) also shows that the project is substantially on schedule.

d. By June 1982, the MIT has assigned a chief counterpart to work with the project and has demonstrated its receptivity to the institutional development goals of the project.

Recommendation:

If any of these four critical events are not successfully completed, the team recommends that the project be terminated as soon as is practicable after any of those conditions become known.

14. Finding.

The project is authorized in the amount of $6,977,000. Table 2 shows costs only will amount to $5,816,800, leaving $1,160,200 as of the revised PACD. The team intentionally did not attempt to project implementation activity beyond this date because it is believed that such an analysis would then jeopardize the integrity of the analysis presented in the table. If that analysis proves reasonable and the next evaluation scheduled for June of 1983 supports it, a number of options are available.

a. Inflation may consume a substantial part of it. Therefore, it would be considered as an additional contingency beyond that already factored into the table.

b. Funds could support only a technical assistance component within MPW that was primarily funded by another donor.

c. Additional subprojects could be constructed over an additional 6-10 months, i.e., early to mid-1985 until funds are exhausted.

d. Funds would be deobligated as of the revised PACD in September 1984.

Recommendation:

The second evaluation scheduled to take place June 1983 (as scheduled in the OPG) should review project costs, inflation, number of subprojects estimated for remainder of project, and based on these findings, make a recommendation concerning use of remaining project funds.

II. PERSPECTIVE.

In August 1977, the Near East Advisory Committee approved USAID/Yemen's PID for the proposed 279-0044, Small Rural Water Systems Project. This project was intended to be a continuation and expansion of USAID's on-going water activities with the Ministry of Public Works, Rural Water Supply Department (RWSD) under Project 279-0022, Rural Water Supply.

Shortly after PID approval, the Mission made the decision to implement Project 044 through a grant to a PVO. The American Council of Voluntary Agencies was notified; CRS and TransCentury submitted proposals and subsequently in October 1978, TransCentury was selected by the Mission, and the Ministry of Public Works. This selection process required approximately 10 months; more than one year had passed since PID approval.

Following selection, TransCentury required two months to prepare its final proposal. The document was submitted to AID in December 1978, and reached USAID January 2, 1979. This began a six-month NEAC review process with no less than 17 major issues being discussed between Washington and Sanaa. In fairness to all concerned, it should be noted that at this particular time AID was encouraging Volag participation in projects of a much larger scale than was normal for PVOs. Consequently, both Washington and the field were giving too much attention to the quality of Volag project documentation. TransCentury's proposal was approved in Washington June 22, 1979 - six months after submission to AID.

During the above period while Project 022 was drawing to a close, the project utilized PCVs stationed in the villages to implement small water projects. This idea was incorporated into Project 044 as a major implementation component. For a number of reasons which we will not cover in this section, problems later arose over the PCVs in Yemen. This situation resulted in a long controversy with the YARG over their inclusion in Project 044. The MPW's main issue was PCV's technical qualifications. Other questions included lack of adequate technical supervision of the PCVs and, in some cases, objections to the personal behavior of certain volunteers in the field. Although it was clear to both AID and the MPW that PCVs were essential to the project from a cost savings point of view, the MPW was slow to abandon objections. This reluctance, coupled with long delays in project approval led to a crisis when the project was finally approved and Peace Corps, Washington, had not been able to recruit any suitable PCVs for the team. AID/W and TransCentury agreed to launch a special recruitment effort for volunteers and finally were able in June 1981 to field four exceptionally well-qualified volunteers for the project. Recruitment has continued at a very good level since

and the project currently has nine PCVs with technical experience who are performing in a superior manner. This has been of great assistance in improving the YARG attitude towards volunteers. In addition, of course, the cost-savings represented by these technical PCVs equals about $1 million per year and is essential to project implementation.

It took almost a calendar year after approval of the TransCentury proposal (6/22/79) for a Cooperative Agreement to be signed by AID on July 28, 1980.

This time was spent by USAID negotiating with the MPW to gain acceptance of Project 044, as shown by a Letter of Intent, July 9, 1980. The Letter of Intent was required (by AID/W) prior to the signing of the AID/TransCentury Cooperative Agreement on July 28, 1980. It was at this point that TransCentury was authorized to spend Grant money on the project. Six months more elapsed between AID's approval of the Cooperative Agreement and TransCentury's Agreement with the YARG. TransCentury's negotiations with the Ministry were difficult and frustrating. Making it more difficult was the fact that virtually all USAID officials involved in the project were new and lacked both institutional memory and personal relationships at the MPW. The Ministry problems with the project stemmed from the fact that it did not fully understand the concept of a technical assistance project. Their total experience with donor assistance was in the field of "turn-key" projects and commodity transfers. The negotiating process required a complete re-education of the MPW in the project purpose and implementation strategy.

No less than 11 redrafts of TransCentury's Letter of Agreement negotiated word by word at the highest levels of YARG were required before approval in January 1981, a process that consumed five months.

Following the YARG approval of the TransCentury Letter of Agreement on January 20, 1981, TransCentury gained USAID approval of their first work plan in March 1981. The following month (April 22, 1981), MPW assigned TransCentury the first subprojects for implementation in Hodeidah Governorate. Design of these subprojects started in early May with construction starting in early August. This five-month delay was caused in part by Ramadan and normal start-up delays; however, it was primarily due to lack of technical leadership at TransCentury. The second set of projects (Darwan-Anis) assigned in November, were under implementation by December 20. This difference is attributable partly to experience and arrival of PCVs, but most importantly to the arrival in October of an experienced engineer to serve as temporary Chief of Party.

A final factor to be considered is TransCentury's team mobilization, particularly the position of team leader. When the OPG was originally approved by AID/W, TC had proposed a senior engineer for the COP position. However, as months passed in negotiations this person was eventually posted to another TC project. At the time the CA was finally signed, the TC candidate, who was approved, was not a technician but was a fluent Arabist with previous Middle East experience in project administration. Unfortunately, as time went on, it became clear that the project was suffering seriously from the lack of a senior engineer. This was apparent in relations with the MPW, and in TC's failure to prepare a realistic budget or to organize its team to get implementation underway. The weak leadership seriously underminded this project and created a lack of confidence in TransCentury at the USAID Mission. In conference with USAID, TC made the decision, in May 1981, to let this first contract expire and seek an engineer for team leader. Within one month, an experienced professional engineer (E. Kinney) was proposed and visited Yemen. Both AID and the MPW concurred in his appointment and Mr. Kinney departed to fulfill previous obligations with the understanding that he would begin work in mid-October. In the interim, TransCentury arranged for a retired AID engineer who had worked in Yemen to act as temporary COP. In October, TransCentury was informed by Mr. Kinney that he could not accept the position. Two new candidates were proposed in November, David George and Paul Holm. Mr. George came to Yemen and decided after about 10 days that he could not accept the assignment. TC then proposed Paul Holm who was interviewed in Washington in January 1982 by MPW and USAID personnel. AID/W then requested that pending the final results of the project evaluation (February 1982) Mr. Holm would not be sent to Yemen. This message was communicated to USAID in early February 1982, while the evaluation was underway.

The long period - 22 months - required to select TransCentury and approve their Proposal is attributable to the uncertainties of the new mode of project implementation by PVOs. The extended and difficult negotiating period with the YARG that followed - 16 months - was caused by a number of complicated factors which included:

- Reluctance of the YARG to approve PCVs.
- Lack of understanding on the part of MPW regarding Project 044's purpose and implementation strategy.
- Some lack of credibility of the MPW for TransCentury based at least partly on lack of technical leadership.

- The extended time frame of the negotiating period and frequent change in Mission management, i.e., three Mission Directors, two Deputy Directors, four Project Officers.

There has been a categorical criticism of the project by AID/Washington - taking too long and costing too much. The Mission shared many of these criticisms until fall of 1981 when a well-qualified (albeit temporary) team leader took over project management. Since then, USAID has modified its views, as the team was quickly organized into efficient work units and has demonstrated to us that they are capable of handling this project. The clear lesson has been that, with qualified leadership, Trans-Century is indeed able to implement this work. The question that remains imperative to project success is whether TransCentury can recruit such a person on a permanent basis.

III. EVALUATION PURPOSE.

This evaluation has several purposes. Primarily, it is a routine, scheduled evaluation coming one and a half years after signing the Cooperative Agreement, to measure progress against objectives agreed upon by USAID and TransCentury. In addition, however, as indicated above in the description of project history, delays on the part of both the MPW and TransCentury to fulfill parts of their agreement, plus apparently high subproject costs, have caused other questions to be raised. Basically these are whether TransCentury is competent to organize and administer a project of this type, and secondly whether USAID can or should be involved in implementing these small rural water projects. The following three questions, then, form the basis of this mid-term evaluation:

1. Has progress toward project objectives been satisfactory?

2. Is TransCentury capable of organizing and administering a technical project of this nature?

3. Should USAID continue to be involved in implementing small rural water projects and, if so, are there more efficient ways to do so?

The quick answers to these questions are:

1. Since the arrival of a temporary but well-qualified COP implementation of individual water projects (objective number one) has been very good (see pages 18-19 for detailed discussion).

During this first year of project implementation, protracted discussions with the MPW led USAID to believe that the second project objective, providing means for institutionalization of the project within RWD needs revision. This evaluation recommends that this objective be construed as: (1) Training at least 10 RWD technical staff in construction supervision, (2) training a co-manager in supervision and design, costing and budgeting of projects, and general project management. (See pages 38-39 for further discussion).

2. The evaluation team, in reviewing project files, was struck by the marked difference in USAID relations with TransCentury after the arrival of the temporary COP in September. These differences can be specifically attributed to the quickness with which team members were organized into work units and began implementation; the presentation to USAID of a revised and realistic work plan within a month of the COP's arrival; preparation of a new budget based on the work plan, and most important, that subprojects were undertaken and completed efficiently. Based on these findings (discussed in depth on pages 32-37), the evaluators give a qualified "yes": If TransCentury can continue to provide the quality of leadership given by Dave Gephard, then it is capable of organizing and administering this project. The evaluation team recommends that further funding be contingent on recruitment of such a COP and that, if a COP is not hired by June 30, 1982, funding should be discontinued.

3. Whether AID should continue to be involved in implementing small rural water projects is ultimately a policy decision. The evaluators found that on a cost basis, these water projects seem to compare favorably to other donor projects when examined in the long run. They cost more but are better built and will therefore last longer and require less maintenance.

These projects are clearly improving the quality of life of the rural poor. In addition, they are politically important in that they are a visible, direct assistance to the Yemeni people.

Finally, of course, projects of this type can only affect a minute portion of the population. However, since by implementing such projects AID is also training MPW personnel in construction supervision and sensitizing them to the need for high quality workmanship, the project has wider ramifications and should be considered in this light. (See pages 4-7 for a complete discussion and options on implementation).

IV. EVALUATION METHODOLOGY.

This evaluation is a collaborative undertaking between the MPW, TransCentury and AID. The evaluation team is composed of five members: Two from USAID/Yemen, the USAID Project Officer

and the Engineer; one from TransCentury, the (Acting) Chief of Party; and one external AID evaluator (with Yemen experience) from USAID/Mogadishu, and key representatives from the MPW. The basic scope of work (SOW) and major issues to be studied were outlined in a Statement of Work by USAID in December 1981, and subsequently refined in February as the evaluation team mobilized in Sanaa (see Annex VI).

An initial evaluation planning session was held at the MPW on February 8, 1982. In addition to the MPW, the Central Planning Organization (CPO) was represented. A second joint AID/YARG review was held at MPW after the initial field visits (which YARG participated fully in) were completed. The final joint review and presentation of the team findings and recommendations was held mid-March 1982.

In addition to the above, the evaluation process consisted of:

1. A review of pertinent project documents and reports.

2. Discussions with key Mission and MPW officials based outside of Sanaa regarding project progress and issues.

3. Field site inspection visits and interviews with local leaders, TransCentury field technicians, other constructors, and donors.

4. A final presentation and joint review with YARG of evaluation results and recommendations.

USAID had originally intended for an outside evaluator, preferably with water resource engineering background, to participate in this evaluation. It was felt that an outsider's objective view would be important. However, AID/W was not able to locate an appropriate engineer. All efforts to keep this as objective as possible have been made. USAID successfully staffed out the engineering related sections of the SOW by using both the USAID, TransCentury engineers and MPW technical staff.

V. PROJECT STATUS.

As of February 15, 1982, the status of the project is:

1. Design:

Eight new subprojects have been identified by the RWD for investigation and design.

a. Six of these subprojects are located in a new area of work, (75 kilometers north of Sanaa, Sanaa Province, Hajjah area) and will consist of spring and cistern sources of water. (Meshwar - Hajja)

b. Two of these subprojects are located in the Beit al-Faqih area (Tihama), consisting of hand dug well and construction of an elevated reinforced concrete water tank. These two subprojects extend the present project cluster from five to seven projects in this area, all being hand dug wells, elevated tanks and installation of a village water distribution system.

2. Construction:

Five subprojects are under construction consisting of:

a. Two subprojects in the Beit al-Faqih area: Both 50% complete, consisting of construction of elevated tanks and water distribution systems.

b. Three subprojects in the Dhawran Anis area (75 kilometers to the south of Sanaa in Dhamar Province), consisting of spring water sources, collection tanks, a pipeline to the village and public water taps. These subprojects are 80%, 30% and 5% complete.

3. Completed Projects:

Three subprojects have been completed in the Beit al-Faqih area. (81-1 Al-Hillah; 81-5 As Sa'adiah; and 81-2 Muradifah). All three projects consisted of construction of reinforced concrete elevated water tanks and installation of a village water distribution system. The final report and completion certificates are being prepared for approval by RWD and turn-over to the Local Development Association (LDA) and villages.

4. Project Staff:

As of this report, the project staff consists of:

a. Expatriate professional staff (5).

(1) Acting Team Leader (Gephart).

(2) Deputy Team Leader/Administrative Officer (Moyer).

(3) Design Engineer (Shanley).

(4) Field Engineer (Cullen).

(5) Construction Supervisor (Henry).

b. Nine Peace Corps Volunteers - Technicians.

c. Five local hire project technicians (Yemeni).

d. Two RWD technicians (Yemeni).

e. Three Office/Financial/Administrative (Yemeni).

f. Seven (part-time) clerks, translator, guard, cleaning, etc.

Total Staff:
5 Professional expatriates
9 Peace Corps Technicians
7 Yemeni Technicians
3 Office/Administrative/Financial
1 Driver

25 Full-time staff
7 Clerks/Guards (part-time/full-time cleaning staff
32

It is planned that three additional RWD technicians and one RWD counterpart (Yemeni) professional staff will be assigned to the project. This total staff level conforms to the USAID/RWD approved Project Implementation Work Plan for FY 82 (October 1, 1982-September 30, 1982).

5. Equipment/Commodities:

As of this report all off-shore (USA) procurement of project commodities and equipment has been completed and 95% of the USA-procured commodities have arrived at the project site, Sanaa, YAR.

The following additional items are now in shipment from the USA (75 vehicle tires, portable truck crane).

All equipment and commodities are now stored in the RWD warehouse, Sanaa, under the control and supervision of the Trans-Century project professional staff and the RWD Director-General.

The status of project vehicles is as follows:

a. Three Daihatsu 4-WD vehicles - at subproject sites.

b. One Toyota 4-WD pick-up truck - at subproject site.

c. One Chevrolet 4-WD pick-up truck - at subproject site.

d. One Daihatsu 4-WD vehicle - at TransCentury office, Sanaa, (administrative use).

e. One Land Cruiser, 4-WD vehicle - at subproject site (under lease to the project - to be terminated with license of new vehicles).

Total - seven (7) vehicles. Six (6) at subproject sites, one Sanaa.

f. Two Chevrolet pick-up trucks, 4-WD, newly arrived, awaiting YAR registration and license - at Sanaa TransCentury compound.

g. One Chevrolet 8-ton flatbed truck, 4-WD, newly arrived. Awaiting YAR registration and license - at Sanaa TransCentury compound.

h. Two Daihatsu 4-WD vehicles, newly arrived. Awaiting registration and license - at Sanaa TransCentury compound.

i. One Toyota pick-up truck, 4-WD, newly arrived. Awaiting registration and license - at Sanaa TransCentury compound.

Total vehicles:

On site : 6

Awaiting license: 6

12

and one motorcycle

Total vehicles authorized for the project by USAID/RWD is 12 vehicles and one motorcycle.

6. Financial Status:

As of January 31, 1982, the project financial status is:

Expenditure for month of January 1982	$ 91,159.05
Cumulative project expenditures from 7/28/80 to 1/31/82 (18 months)	$ 1,916,102.72

The project budget for FY 82 was submitted to AID/Washington by TransCentury on September 15, 1981 in the amount of US $1,937,388. TransCentury has not received official approval of this budget from AID/Washington. On September 27, 1981, the TransCentury project office, Sanaa, YAR, at the request of USAID/Yemen, submitted a revised project budget for FY 82 to USAID in the amount of US $1,586,555.

No further word has been received by TransCentury/Sanaa from USAID regarding approval, disapproval or comments on this revised budget. USAID has, however, communicated its views to AID/Washington on November 15, 1981 and is awaiting a reply.

7. Training, Reports, FY 82 Implementation Plan:

As of this status report on-the-job training activities continue with the PCVs, TransCentury Yemeni technicians and RWD technicians. Training of these technicians has now reached a level where it is possible to assign two or three technicians to a subproject to supervise and control the complete construction of the subproject.

This now allows a minimum of five subproject sites to be under construction at any one time.

All monthly quarterly and financial reports to date have been completed on schedule and submitted to RWD and USAID. The TransCentury bi-weekly financial report continues due to the requirement of the FRLC method of funding.

The FY 82 project approved Implementation Plan is on or ahead of schedule.

Construction completion and design completion activities are ahead of schedule. All other activities are on schedule. The staff requirement support to the project by RWD (five technicians and one counterpart engineer to the Team Leader) will fall behind schedule by March 1, 1982. All other activities will remain on or ahead of schedule.

8. Issues/Recommendations/Comments:

a. The project evaluation started on February 8, 1982 and was completed by mid-March 1982. The evaluation is to determine any recommended change in life of project, project funding and project direction.

b. Project activities, other than staff support from RWD, are expected to remain on schedule or ahead of schedule for the remainder of FY 82.

c. As of January 1982, the project is at the planned level of operating capacity, in accordance with the FY 82 work plan with regard to commodities, equipment, vehicles and field staff.

VI. EVALUATION COMPONENTS.

The specific factors identified for evaluation were the following: (1) Project Costs and Financial Analysis; (2) TransCentury Organization and Management; (3) YARG Participation; (4) Institution Building; (5) Achievement of Outputs; and (6) TransCentury Compliance with Cooperative Agreement. Each of these factors was reviewed by the evaluation team and is discussed below.

1. Project Costs and Financial Analysis.

a. Details of Project Costs.

For purposes of this evaluation, project costs are related to the following items:

	Costs
July 28, 1980 to January 20, 1981 Signing of the Cooperative Agreement (TC/AID) to signing of the Letter Agreement (TC/YARG)	$355,000
January 20 to April 22, 1981 Period of time until first subprojects sites assigned to TC by RWD.	$435,000
April 22, 1981 to January 31, 1982 Design and construction of the first five subproject village water systems	$1,126,000
Total: (July 28, 1980-January 31, 1982) =	$1,916,000

Of this $1,916,000 expenditure:

(1) Equipment/commodity procurement = $ 806,000 (42%).

This investment of $806,000 of equipment and commodities (vehicles, tools, concrete mixers, pipe, fittings, etc.) is estimated to support project activity and subproject water system installation (estimated $5,000 per each of 55 subprojects completed) through FY-84 (September 1984).

(2) Project start-up mobilization costs (July 80-April 81) = $ 500,000 (26%).

(3) Average monthly operating costs for (a) salaries, (b) operational costs, (c) contractor overhead from July 80-January 82 = $ 61,000 (P/M).

(4) Average monthly operational costs under full implementation (field staff 25, 8 subprojects under design/construction, etc.) (August 81 - January 82) averaged: $65,000 to $ 67,000 (P/M). For purposes of subsequent project budgeting through FY-84 $67,000 per month operational costs is used to cover costs of: (a) Total project staff of 30-35; (b) Operational costs; and (c) Contractor overhead. The above monthly operating cost is charged as an indirect cost against each subproject system completed. In addition to the above, each subproject system completed has a direct cost charge of supplies, equipment and commodities.

b. Subproject Water System Costs.

The total cost of identifying, designing, constructing and supporting the installation of a village water system (subproject) consists of the following cost components:

Direct Costs (from AID project funds).

Design cost.
Imported material costs.
Cement costs (local purchase).
Skilled labor for construction.

Indirect Costs (from AID project funds)

Project technical salaries.
Recurrent operational costs (MPW).
Contractor overhead.

Village or LDA Contributions (charged as in-kind direct cost to each subproject).

Unskilled labor.
Local materials.
Pump, well (where existing).
Storage/housing.

Peace Corps Volunteer Technical Assistance

Technicians support through Peace Corps/YARG (not charged to subproject cost).

Rural Water Deparment

Administrative Support.
Technician salaries (not charged to subproject cost).

The project is basically building three types of water systems.

Coastal Plain Village System of an RC elevated water tank, distribution system, pump, well, water points. Present subproject costs show a village per capita beneficiary cost of $80-150.00 to install this system.

Mountain Village System of a spring gravity flow source of water, holding tank, limited distribution system and public water taps. This system installation costs show a $35-120 range per capita beneficiary.

Mountain Village System - spring or well or stream source, lift pump ground holding tank, a limited distribution system and public taps. This system installation costs are estimated to range from $60-125.00 per capita beneficiary.

The first of two cost analysis presented in this project show actual and current estimated costs per capita beneficiary. (See Table 1).

c. Summary.

The teams analysis of present project costs provided in Table 1 show:

(1) That project operational costs as an indirect subproject charge (salaries, recurrent and overhead) will accrue at the rate of $65-70,000 per month.

(2) Direct subproject system installaion costs, projected, are estimated to range from $35.00 to $150.00 per village capita beneficiary. This wide range of per capita costs is due to the small size of the villages selected by the YARG initially and the increasingly larger size of villages selected as the project progresses. The team believes end of project per capita costs will be about $125.00. The average subproject direct cost is estimated at U.S $50,000 of which (a) the village contribution will amount to $15,000, (b) previously procured (AID-funded) supplies, equipment and commdities will represent $5,000 of already sunk costs, (c) leaving a direct AID-funded projected subproject cost of $30,000 per system installed.

(3) At an estimated rate of completion of 1.5-2.0 systems per month. Subsequent project monthly cost requirements (AID-funded) should not exceed $120,000-$160,000. The above summary of costs is based upon a project implementation level using 25-28 field personnel and 5 to 7 office support personnel. This is the staffing level established in the current FY-82 Project Work Plan attached at Annex I .

Project operation levels should not exceed this established staff level. To do so would require additional capital cost investments, for staff support and additional technical support, all of which the team does not believe cost effective in terms of increased outputs. (Subproject systems and technician training).

AID has been seriously concerned about the relatively high start-up costs of the project generally, and the project's slowness to produce outputs. The team's second cost analysis also addressess this concern and is based upon subproject implementation using actual project costs to date. The figures contained in Table 2 for the period beyond March 1982 are projections made on the actual costs known from constructing subprojects in the field. Further, it is especially important to note that the amounts shown in column two of Table 2 represent all costs beginning with actual project implementation start-up in July 1980 through February 28, 1982. This amount totals $1,916,000.

PROJECT COST TABLE OF SUBPROJECT UNDER-DESIGN, CONSTRUCTION OR COMPLETED.

TABLE 1

SITE	SYSTEM TYPE	POPULATION	$ COST	$ PER CAPITA COST	STATUS
Hillah (Tihama)	RC elevated tank distribution system	725	85,000	117.00	Actual Costs
	Village contribution was 22% of system cost. Actual AID-funded direct costs for the system was US $91.25.				
Muradifah	RC elevated tank distribution system Well, Pump.	594	65,000	107.00	Actual Costs
	Village contribution: 32%. AID-funded direct cost per capita = $72.75.				
As Saadiah	RC tank distribution system Well, Pump.	825	84,000	102.000	Estimated Costs
	Village contribution (est) = 54% AID-funded direct cost per capita (est) - US $47.00. This project is completed but final cost data have not been compiled.				
Khadhariyah (Tihama)	RC tank distribution system Well, Pump.	645	57,000	89.00	Estimated Costs
	Village Contribution = 35%. AID-funded direct cost per capita (est) = US $58.00. Project is 60% complete.				
Al-Mahad	RC tank, well pump distribution system.	730	52,000	71.00	Estimated Costs
	Village contribution = 48%. AID contribution per capita (est) = US $37.00.				
Al-Hindayah (Mountain)	Spring, groun tank single line	150	20,000	133.00	Estimated Costs
	Village contribution = 41% Est AID contribution per capita = US $78.00.				
Al-Anise (Mountain)	Spring tank line	300	23,000	78.00	Estimated Costs
	Village contribution = 50%. Est AID contribution per capita = US $39.00.				
Al-Marwan (Mountain)	Spring tank line	750	24,000	32.00	Estimated Costs
	Village contribution = 51%. Est AID contribution per capita = US $16.00.				

The second type of analysis made in Table 2 shows what direct and indirect costs should be for the construction of 47 remaining subprojects through September 1984.1/

Both the analyses contained in this section include amortization of all commodity purchases to date ($806,000) which as said earlier represents 42% of project costs. Lastly, the subproject costs shown in Table 2 are established by dividing total AID-funding by the number of systems (subprojects) completed. Both the Table 1 and Table 2 analyses presume that at a minimum the following critical events are accomplished successfully by TC, AID and YARG. (a) That a permanent COP is assigned by June 30, 1982; (b) that a review of project progress and subproject construction six months after this evaluation shows that it is substantially on schedule; (c) that another in-house project review 12 months after this evaluation shows likewise; and (d) that by June 1982 the MPW has assigned the chief counterpart to work with the project and has demonstrated its receptivity to the institutional development goals of the project.

d. Project Beneficiaries.

If the project completes 55 subprojects by mid-1984, which the team now believes realistic based on a revised implementation plan and PACD of September 1984, then total AID direct and indirect beneficiary costs are estimated at $125 per capita. The project would then be benefitting an estimated 55,000 persons.2/

Table 2 also illustrates total, estimated project costs amortized over the life of the project and shows the impact of implementation experience on sub-system per unit costs after amortization of the early start-up costs. The reduction is dramatic. As can be seen, the per unit costs for the first group of 12 projects is reduced to $79,400.

Assuming that as of September 1984, substantial progress has been made within the MPW regarding institutional development goals of the project, then the project has produced replicable village water systems at very reasonable costs. It is estimated the MPW would require only three technicians who could possibly be funded by another donor if the YARG decides to continue what this project has hopefully accomplished.

1/ For a LIfe-of-Project total of 55.

2/ 55 systems complete and presumes 1,000 full-time and part-time users.

TABLE 2

MAY 1981 FIELD WORK DESIGN OF SUBPROJECTS	1st GROUP OF FIVE COMPLETE FEBRUARY 1982	2nd GROUP OF THREE COMPLETE (INSTEAD OF ORIGINALLY PLANNED FIVE March 1982	3rd GROUP OF FIVE COMPLETE OCTOBER 1982	4th GROUP OF TEN COMPLETE MARCH 1983	5th GROUP OF TEN COMPLETE (CURRENT PACD) SEPTEMBER 1983	6th GROUP OF TEN COMPLETE FEBRUARY 1983	7th GROUP OF TWELVE COMPLETE SEPTEMBER 1984	TOTAL 4/
			(NOTE: Current estimates indicate project can actually complete eight.)					
Total Cost 1/	$1,916.0	$321.0	$540.0	$635.0	$702.0	$750.0	$952.8	$5,816.8
Cost System 2/	383.2	107.0	108.0	63.5	70.2	75.0	79.4	102.9
Total Amount of LDA Contribution 3/	129.8	31.9	175.0	304.8	375.0	334.0	408.0	1,758.5
Total % of LDA Contribution of Total Costs	6%	9%	25%	32%	35%	31%	30%	23% (Avg. LDA Contribution)

1/ This amount is total dollar expenditure of project starting from July 1980 through February 1982 and represents project start-up, mobilization to site, procurement of equipment and supplies, salaries, overhead of contractor, etc. The project procurement costs amount to U.S. $806,000 of this amount (42%)

2/ System cost, for illustrative purposes up to this date, is established by dividing total AID-funded project costs by systems completed as of same date. The rise in costs shown for the 4th group of subprojects and beyond is attributed to built in inflationary factor, i.e. commodities and technical assistance.

3/ This in total village contribution made to costs of subproject system. It represents, in kind, costs of labor, local materials, housing, storage, pump, engine, developed well.

4/ The evaluation team recommends revision of the current PACD of September 1983 to a revised date of September 30, 1984 in order to accomplish reduced level of outputs, i.e. 55 subprojects.

e. Cost Comparisons with Other Donors.

The USAID engineer's analysis of some of the other projects being implemented through the MPW with Dutch, UNDP and WHO funding show TransCentury costs about 30-40% higher. However, costing data examined was not as complete as that of TransCentury and the quality of the TransCentury subprojects is higher and systems are built with a 40-year life span. The USAID engineer estimates that other donor projects observed would not have a life span longer than 20 years. Maintenance costs would also be higher for the latter. If we examine present worth and appreciation, the TransCentury work is more economical and cost effective than that observed being carried out by other donors.

f. Comparison of Proposed Project Costs to Actual Project Costs.

The project proposal submitted to AID by TransCentury on December 6, 1978 provided, under Appendix V, a Cost Analysis for individual subproject water system installation costs.

These cost analyses were based upon the assumption that three types of subprojects will be designed and constructed under the project.

These system types were:

Type I - Cisterns.

Type II - A system where a pump engine, holding tank and distribution system is to be installed.

Type III - A system where the pump and engine exists and a holding tank and distribution system is to be installed.

The cost analysis did not include the cost of technical assistance which has been found to represent some 40% to 60% of the incurred costs of systems being built under this project.

Of the above three types of systems, the average AID input per subproject (including Peace Corps technical assistance) was estimated to be $14,000 and the village contribution was estimated to be 40% of the total subproject cost.

It was also assumed that other donors would contribute an average of 20% to the cost of the Type II and III systems and that RWD would contribute 7% of the total system costs.

On the above basis of AID, village, RWD and other donor inputs, the average cost of the system (Type I, II, III) was estimated to be US $41,593.

It was also assumed that the average village population served would be 1000 per subproject water system installed or an average of US $42.00 per capita cost, not including AID technical assistance costs inputs.

No inflation factors were applied to the above costs. Inflationary costs from January 1, 1979 to January 1, 1982, a three-year period, would compound to 36% for material costs, 20% for labor costs and 40% for equipment costs (vehicle, tools, etc.).

g. Analysis.

An analysis of the initial project assumptions related to cost and population served shows the following:

(1) The average population of subproject sites as assigned by RWD to the project is 600. This is 400 less than initially assumed in the project proposal. The cost of installing a system, Type I, II, or III, would, for a village population of 600, be 80%-90% of the cost of a village system serving a population of 1000. This is due to the fact that the tank size, distribution system and well-tank connections would be approximately the same for the cost of system material and labor costs for either a 600 population or a 1000 population. Another factor that lowered village population size as related to the initial assumption, is that the distribution of Yemen's population (1975) show only 5% of the people living in village sizes of 1000-2000 population while 52% of the people live in village size of 100 to 1000, (9% living in village size 500-1000 population). The probability that the project would be assigned subproject village sites of average population of 1000 was less than (.10) 10%. Subsequent subproject assignments for the remaining life of this project are expected to average 500-700 population per village site.

(2) The assumption that other donors would contribute 20% to the water system installation costs was not borne out. Instead, UNICEF now has its own, similar project. Of the systems installed to date under this project, no other donors have contributed to the cost. This condition is not expected to change.

(3) The decision not to consider or allocate the AID-funded technical assistance cost to each subproject system installation was erroneous. The project has determined that 40% to 60% of the total AID-funded portion of each subproject site installation cost is represented by indirect technical assistance and project support costs.

(4) The non-inclusion of an inflation cost factor applied to project costs (materials, labor, equipment, technical assistance) would represent an additional 32% projected price increase in 1982 dollars to the project.

(5) In comparison with initial project cost assumptions made under the project proposal and actual project costs, with the above factors included, the cost picture is quite favorable.

As:

(a) Actual subproject direct costs are averaging $45,000 to $50,000 per subproject system installation (February 1982). The AID funded portion of this cost would average $30,000 to $35,000.

(b) The AID funded indirect costs, at present levels of operation, would average $33,000 to $35,000 per subproject for a total AID funded of each subproject cost of $63,000 to $70,000.

The 1978 AID project input estimated costs if adjusted for inflation, technical assistance, and absorption of other donor costs would show:

AID	$22,000	- direct cost
Technical Assistance (40%)	$15,000	- indirect cost
Inflation (average 32%) 3 years	$11,840	- direct and indirect costs (50-50)
	$48,840	
Village Contribution (40%) of direct costs	$16,000	
TOTAL	$64,840	= $108.00 per capita beneficiary cost

Average 600 population

Actual project costs are averaging $65,000 per subproject system including all technical service and support, and serving an average of 600 population per village. This becomes a per capita AID-funded cost to the project of $\frac{\$65,000}{600}$ = $108.00.

The project per capita cost per type of system, as shown elsewhere, in the cost section of this evaluation, runs from $85.00 to $150.00 per capita. It is considered that 1982 actual project costs adjusted for 1981-82 prices, technical assistance and support and other donor involvement are in line with the original 1978 project cost estimates.

h. Findings:

(1) Construct village subproject systems where village population is 800 to 1200 for optimum per capita cost. However, this village size only represents about 10% of the population distribution for Yemen.

OR

(2) Reduce the system design and construction for villages under population 800 to provide a simple system of a collection, holding tank, and one public multi-faucet water point. This would serve the village but would not provide a village pipe distribution network for house connections and would cut system installation cost by an estimated 25% to 30%.

2. TransCentury Organization and Management Capability.

As mentioned earlier, a major concern of both USAID/Sanaa and AID/W was TransCentury's competence to handle a technical water project. The major factor contributing to this concern was the weakness of technical leadership during the first year of implementation. The fact that neither the chief of party or the TransCentury support staff in Washington had any engineering background was undoubtedly a major reason why TransCentury was unable to produce a final financial plan and work plan for the project. Deployment of team members appeared disorganized. It was unclear, both to the MPW and to USAID how the team would be structured to implement 20-30 water projects per year. These factors instilled a lack of confidence, both in USAID and in the MPW, which undoubtedly contributed to the reluctance of the RWD to sign the Letter of Agreement and, later, to assign village sites to the team.

The evaluators identified four main points which they considered essential to good project organization and management (a) ability of TransCentury to field an appropriate well-qualified team on a timely basis, (b) ability of TransCentury to establish a work schedule which corresponds to local realities as well as to personnel capacity, and (d) ability to organize team members to maximize their work output and assure efficient production. These parts are reviewed below. Ultimately, the team found that these points were contingent on good technical leadership. Since September, under the leadership of Gephart, TransCentury performance in these areas was highly satisfactory. Before this period, it was inadequate.

a. Team Recruitment.

The CA initially called for an expatriate staff of five persons: Team Leader, Water Resources Design Engineer, Well Master, Construction Supervisor, and Civil Design Engineer.

In negotiating with the MPW, who was interested in reducing expatriate staff to a minimum, TransCentury cut their staff to four persons: Team Leader, Civil/Design Engineer, Water Supply/Hydraulics Engineer, and Construction Supervisor. These persons were in place by October 1981. With the exception of the team leader, the other members were, although young, well-qualified for the positions - two had master's level degrees in civil engineering and several years field experience in Yemen; the construction supervisor had 3-4 years previous experience in the same job in Yemen, and all spoke adequate Yemeni Arabic. The initial TransCentury team leader, however, did not have the technical background, and after six months USAID and TransCentury determined to look for a replacement who could give technical leadership. This search is still continuing and it has proved very difficult to locate the right person for this job. (It should be noted that the Mission has had difficulties finding COPs for all projects in Yemen).

In November 1981, the MPW refused clearance to a locally hired female Water Supply Engineer who was then placed on a short-term contract by TransCentury while they looked for a replacement. In March, an in-country expatriate engineer (male) was hired as a short-term replacement in this slot. By summer, the slot was redesignated as design engineer and the expatriate engineer was taken on as a permanent staff member in January 1982. TransCentury requested that USAID approve an additional slot for an administrative officer (originally proposed in the OPG and vetoed at the NEAC). This was approved, bringing the total American team to five positions.

In summary, TransCentury's "batting average" was about 80%. Their actual field team was recruited quickly and is extremely well-qualified. The decision to hire an administrative officer was a good management decision, and in fact was necessary to provide transitional leadership. The failure so far to find a well-qualified team leader is serious. So far, TransCentury has filled this gap by short-term assistance from a retired AID engineer, so the project has not suffered; undoubtedly, however, one of the reasons for the four-month lag between assignment of the sites in Beit al-Faqih and actual commencement of implementation was the lack of this technical leadership.

b. Financial Management.

TransCentury has had difficulties in producing financial projections for this project and at this time still does not have an AID approved budget. The main budget difficulties initially came from uncertainties about the size and composition of staff and estimates for costs of subprojects. The staff questions

centered primarily around the composition of the construction teams; as an example, until April-May 1981, it was not at all clear whether Peace Corps would be able to recruit PCVs for the project. If PCVs were not available, there would clearly need to be a large sum set aside to hire local technicians. At that time, it was also difficult for TransCentury to predict how many people they would need for the construction teams.

Estimates for subproject costs were based upon the limited cost data available from the past AID-financed 022 project. Obviously, however, subproject cost data has become more accurate as the project has acquired "hands-on" experience.

TransCentury and USAID worked together on the budget and the FY-82 edition was presented to USAID and AID/W in September 1981. Although this hasnot yet been formally approved by AID, the Mission has concurred in this FY-82 budget. Most of the problems apparent in the earlier budget submissions can be attributed to the lack of inputs of a qualified technical leader, and to the general lack of TransCentury experience with this type of project. The budget issue now appears to be resolved and USAID is confident that if TransCentury can recruit a qualified COP, it can accurately and realistically prepare a project budget for subsequent FY project operations.

The FY 82 budget submission for the project, as submitted by TransCentury to AID on September 15, 1981, is in the amount of $1,937,388. Project expenditures from October 1, 1981 - January 31, 1982 (four months) amount to $535,000.

c. Project Implementation Plan.

The Cooperative Grant Agreement required TransCentury to submit within 60 days from the effective date of the Agreement (July 28, 1980) a project time-phased implementation plan to USAID/Yemen for approval. This was done by the TransCentury/Sanaa staff in mid-September 1980. However, due to the non-execution of the Letter Agreement between TransCentury and RWD this implementation plan did not officially go into effect until January 20, 1981 and was not approved by USAID/Yemen until March 1981.

This initial project implementation plan was to cover a period from January 1, 1981 to March 31, 1982 (five quarters) and called for the following major accomplishments:

(1) The design of 30 subproject sites for water systems.

(2) The completion of construction of 20 subproject water systems.

(3) The build-up of project staff to the level of 25 to 30 people, including site administrative support staff.

(4) The procurement in the U.S. of a first tranche of project commodities and delivery of these commodities to site.

(5) The completion of an analysis of the RWD operation with appropriate recommendations for the organization development of the department.

(6) The undertaking of on-the-job training of the locally hired TransCentury staff and assigned RWD technicians.

Following signing of the Letter of Agreement on January 20, 1981, TransCentury anticipated that RWD would assign subproject sites immediately so that TransCentury could start design work and other related activities. However, it was not until April 22, 1981 that RWD assigned five subproject sites to TransCentury, all located in the Beit al-Faqih area of the Tihama, in Hodeidah Province. This delay by the RWD in signing of the Letter of Agreement and assigning of subproject sites, amounting to approximately five months time, is estimated to have cost the project $200,000 in non-productive recurrent operational costs plus a loss of four months of scheduled implementation time.

The implementation plan then was followed in part during the first four months of 1981 but it was only with the assignment of the five subproject sites on April 22, 1981 that the full operation of the project could start.

During the period from July 1, 1981 to October 1, 1981, the project implementation plan was revised. The first implementation plan was unrealistic in the large number of subprojects that were scheduled to be assigned, designed, and constructed during the first year of the project. Specifically, the (a) rate of assignment to TransCentury of subproject sites by the RWD and (b) the rate of completion of designs, approvals, village agreements, subcontracting and completion of construction represented two major implementation problems, requiring considerably more time for fulfillment than scheduled under the original implementation plan.

This situation was further exacerbated by the fact that the Team Leader in residence (August 1980-June 1981) did not have the necessary technical know-how and engineering management experience required for project implementation. Shortly after the ex-AID Engineer assumed the position of Acting Team Leader for the project (September 1981), he prepared (October 1981)

a new Time Phased Implementation Plan for the project covering FY 82 (October 1, 1981-September 30, 1982). This Implementation Plan was submitted on October 10, 1981 to the RWD and USAID for review and approval. November 9, 1981, USAID approved the plan for the FY 82 project operations; the RWD accepted but did not officially approve the plan. The plan has been in operation since October 1, 1981 and up to February 1, 1982, TransCentury has maintained or exceeded the target schedules.

The FY 82 Implementation Plan calls for the following major activities:

(a) The identification by RWD and design by the project of 15 subproject village sites during FY 82.

(b) The completion of construction of 12 subproject village water systems during FY 82.

(c) The application of new construction technology on four to five subproject sites during FY 82.

(d) A staff level for FY 82 of (1) Five professional staff, (2) five Yemeni technicians, (3) nine PCV technicians, (4) five RWD technicians, (5) five to seven local hired administrative clerks, financial clerks, expediters for a total field staff of 20-25 people and five to seven office staff at the TransCentury Headquarters, Sanaa.

(e) On-the-job training, rotating through field job positions, for the 10 local hired Yemeni staff including RWD technicians.

(f) Completion of all off-shore (USA) procurement.

The above activities are planned to be carried out within the budget of U.S. $1,586,555 for the FY 82 project operation. This budget figure represents a revised project budget submitted to USAID/Yemen by TransCentury/Yemen on September 27, 1981. It represents a downward revision amounting to $350,833 of the FY 82 budget (US $1,937,388) that was submitted by TransCentury/Washington to AID/Washington on September 15, 1981. Neither budget has been approved, at this time, by AID/Washington or USAID/Yemen.

As of the time of this evaluation (February 15, 1982), all project activities are on or ahead of schedule in accordance with the FY 82 Implementation Plan.

d. Efficient Utilization of Staff.

TransCentury has a total of 25 field staff members and seven office/part-time staff. This includes five expatriates (described above); five Yemeni technicians; nine PCVs; six support staff (guards, one driver, clerk-typists) and five part-time clerks, cleaners. In addition, there are two senior technicians (a construction supervisor and a pipefitter) from the MPW working with TransCentury. The support staff, COP, administrative officer and design engineer are stationed in Sanaa. The remaining personnel have been divided into five or six work teams, each with its own specialty, i.e., concrete work, pipelaying, tank construction, valves, etc. TransCentury has organized its work into tasks so that several villages, and also several areas can be worked on simultaneously, allowing for maximum utilization of the teams and project support equipment. Thus, in Beit al-Faqih, three teams are working in three villages, while two others are in Anis. This system is capable of working on seven sites simultaneously. Rotation of location allows the workers a respite from the extremely hot weather of the Tihama without a loss of work days. At the same time, the team concept allows less experienced crew members to learn on-the-job. While this work is on-going, the Design Engineer in Sanaa is negotiating new project sites with RWD and preparing designs for their construction so that there will be little or no delay between completion in one area and phase-in in another. (The third subproject site area of Meshwar-Hajja has been assigned by the RWD and is presently being surveyed by TransCentury for village systems).

3. YARG Participation.

Participation of the RWD in this project, while still disappointing, has improved considerably from a year ago. During the negotiation period and until actual implementation of subprojects began, the RWD expressed skepticism about the project - partly because many of the project staff were relatively young and inexperienced. However, at meetings held during this evaluation, the MPW expressed satisfaction with the project and confirmed that they wished to see it continue.

The RWD has not officially assigned a counterpart to work directly with TransCentury on this project since project start-up on January 20, 1981. TransCentury directs all project issues and needs to the Deputy Director-General of RWD. However, this person, being one of the five senior staff of the RWD, is responsible for coordinating all donor activities and hence has very limited time to focus on TransCentury project issues and assist where necessary.

This situation is one of the major factors causing delays in project specific implementation activities, such as assignment of subproject sites, custom clearance problems, village agreement negotiations requiring additional TransCentury staff time, and raising project costs. There is no doubt that the project has been handicapped by not having a full-time counterpart to facilitate these activities. The assignment of RWD technicians to the project has fared somewhat better. In October 1981, RWD assigned four technicians to work on the TransCentury teams. Two of these worked out well, but in discussions held during this evaluation more have been promised.

The primary reasons why the MPW has not been more forthcoming are two-fold. First, the technical assistance type of project is new to RWD. Their experience has been, almost if not entirely, with turn-key projects where donors contribute all the funds and the project is implemented by a consulting engineer. It has proven extremely difficult to explain to the Ministry that USAID projects do not follow that mode. However, they are beginning to understand. The second reason is that RWD is very understaffed; there are only five or six senior level officials (the director, chief engineer, deputy director, accountant, two or three field engineers) and under them two or three dozen line personnel. Thus, in order to appoint a counterpart, the Ministry will either have to appoint someone from another branch of the Ministry, or bring in someone from the outside. Nevertheless, the evaluators feel that a full-time counterpart is critical to the success of this project and must be appointed to the project as soon as possible.

4. Institution Building.

The project paper called for TransCentury to "provide the means for institutionalization of the project within RWD". An assumption underlying this was that the RWD would be receptive to institutionalizing capability. A further (unspoken) assumption was that USAID, through TransCentury, would be in a position at the MPW to influence this kind of decision. Experience so far in this project by AID and by other donors tends to indicate that both these assumptions were unfounded. As mentioned above, the RWD is accustomed to turn-key projects and does not yet recognize a need to improve its own capabilities at its highest levels. USAID (and other donors) have no leverage to influence decisions at this level, nor does TransCentury have the staff to enter into such a long-term educational process.

During negotiations for this project, and in subsequent discussions with the Minister, Deputy Minister, and the Director of the Rural Water Supply Department, USAID has received various, sometimes conflicting requests from the Ministry concerning the institution building components of the project.

Minister Kurshumi has stated that when the project was first discussed what the MPW had requested was administrative and management assistance - two people, a management specialist and a civil engineer. In addition, both the Minister and Abdul Bari Salch (Director of RWSD) have stated several times that they needed assistance in warehouse supervision and management.

In other discussions with Mr. Kurshumi and Deputy Minister Jamal Abdo, they have requested undergraduate training in hydrogeology, civil engineering, surveying and drafting.

In addition, as the RWD is now assuming direct responsibility for subcontracting with local Yemeni contractors to construct fairly important water systems (with populations of 5000 or more people), it does now recognize a need to strengthen the skills of its technicians so that they can supervise contract work.

The project has already moved into this last type of training and is now negotiating with the MPW to institutionalize this kind of on-the-job training by cycling groups of five technicians from RWD into its work teams, each to work for 12 months with new start-ups, each six months.

The other training concerns mentioned above, raised by the MPW, were not mentioned again during this evaluation. However, the evaluators feel that most of these needs could be covered by a qualified COP working with a full-time counterpart. Project success is heavily dependent on the RWD providing a high level counterpart, not only to facilitate subproject implementation, but also to assure that skills such as supervision and design, costing and budgeting of projects and general project management are in fact transferred to MPW personnel.

In addition, the MPW has expressed interest in long-term training for some of its employees in administration, hydrogeology, surveying. AID will endeavor to meet these training needs under the participant training program, as the Rural Water Project has no funds for training.

5. Achievement of Outputs.

There are actually only two outputs to this project:

a. 140 projects designed and constructed.

b. Improve the capabilities of the RWD of the MPW and of selected rural villages to develop, maintain and administer rural potable water systems.

For the first output, which realistically started in May 1981, TransCentury has three completed subprojects in Beit al-Faqih; two more in Beit al-Faqih 50% complete; three in Dhawran-Anis 80%, 30% and 5% complete; eight new projects under consideration and design. TransCentury now estimates that this fiscal year they will complete 12 projects. However, in coming years they estimate that they can complete 25 per year if the MPW provides (a) a full-time counterpart, (b) subproject sites in groups of 10 and (c) a project review and discussion on a quarterly basis with the Deputy Minister for Public Works. At present, much time is lost because expatriate staff must become involved in village negotiations to sign subproject agreements, as well as in settling disputes which arise almost routinely in this type of participatory project. If the counterpart is provided, then, we can project that in the first three years the project will complete 55 projects; projected over five years, TransCentury acting COP estimates another 40 projects or a total of about 95.

The original figure of 140 was an over-estimation. At the time this project was designed neither USAID nor TransCentury had the actual field experience with which to make a good estimate. Technically, their estimate was correct. What was not accounted for were the inevitable lags which occur in assignment of project sites by RWD; the considerable amount of time involved in negotiating village agreements; and delays which occur in the lengthy process of clearing commodities through customs.

The following sub-outputs are related to construction of the rural water systems:

a. Feasibility surveys conducted and include basic socio-economic data.

- TransCentury field staff have filed a preconstruction report for each village. This includes the suggested design, population, estimated system cost, water yield and quality. It does not, however, have other socio-economic data as this has simply proved too time-consuming and TransCentury staff are not trained in these survey techniques. In the interests of keeping costs as low as possible, the evaluators feel that the socio-economic data requirement can be dropped.

b. Village selection process established.

- During this first year of implementation, because of the various delays in start-up and credibility problems with the MPW, described in preceding sections, both USAID and Trans-Century felt that they did not have the luxury of picking and choosing among the villages assigned them by the RWD. However, now that eight projects are completed or under construction and eight more are in the design phase, more stringent criteria will be applied to village selection. USAID will request that RWD assign villages to TransCentury in clusters of 10, so that about five to eight can be selected. The target population identified originally by TransCentury was the 25% of the population living in settlements of between 250 and 2,000. From a cost effective point of view, the TransCentury team must concentrate the majority of its efforts on villages in the larger part of this spectrum - at least 800 or 900 persons. Relatively few villages should be at the smaller end of the scale, if per capita costs are to be kept within reason. At this time, in the Dhawran-Anis area, two of the three sites are quite small (150 and 200 respectively); only one village has 750 persons. In the future, TransCentury, with the support of USAID, will insist that the majority of villages in a cluster are closer to the 900 population figure. Other criteria to be applied will include ability of villagers to contribute to and maintain the project (this is currently applied), and proximity to other subproject sites (so that teams can maximize their work efforts).

c. Water quality testing - this is being done, before and after construction.

d. Village health attitudes canvassed and elementary sanitary hygiene education provided.

TransCentury funded one study by Christine Ansell on attitudes towards health (a copy is attached in Annex III). The project, however, does not provide for village sanitary hygiene education. This is definitely needed; in the villages where the water systems have been completed people appear to be using water exactly as they did before the system was constructed. Clearly, an educational component would at least speed their knowledge and understanding of ways to take advantage of more available water, as well as ways to avoid wastewater pollution.

The evaluators do not, however, feel that this is necessarily a role best fulfilled by TransCentury. USAID has approached the Ministry of Health and discussed the possibilities of training primary health care workers for the villages with new water projects. However, the question of sanitation will

not be completely answered through an education component. Where water systems are being installed, TransCentury should increase its efforts during the design and construction phase to assure that full provision is made to avoid standing water, either around the pump, or at stand pipes. The evaluation team was disappointed that the three completed projects had not adequately taken this problem into account and recommend that this be an essential part of the design in future systems.

e. O&M capability established within all subproject villages.

The villages in Beit al-Faqih rely on a local contractor who participated in this construction and is knowledgeable in maintenance and repair of the system.

TransCentury's plan has been to have the LDA in each area identify a person who either already is capable of maintaining the systems, or who can be sent to Sanaa for training through a WHO-sponsored course already offered by RWD. This has proved difficult in Dharwan-Anis since the LDA is not functioning at the moment, due to some dispute. In the future, this should be included in the subproject village agreements.

f. Appropriate technologies developed and employed to improve and accelerate the construction activities of village water system installations.

TransCentury was instructed by USAID to delay experimentation in new technologies until enough subprojects had been constructed to gain MPW credibility. Thus, so far there has been relatively little new technology applied to projects. However, TransCentury intends to begin investigating new methods of installing cisterns and ground storage tanks in Dharwan-Anis as well as Meshwar-Hajja, such as gunnite construction. Project gunnite equipment has arrived in Yemen and will be used in tank construction. TransCentury has also designed an aggregate shaker to clean the sand and gravel being mixed for the elevated water tanks. This has enabled them to obtain higher quality concrete in construction.

g. Standardization of design/construction for simple systems replicability.

TransCentury has standardized reuseable wooden concrete forms for construction of 15 m^3 and 20 m^3 water tanks. They believe these forms will last through 10 pourings justifying the use of expensive plywood and should improve the quality of the concrete finish, the ease of placing and removing these higher quality forms (plywood rather than the usual random size wood).

h. Improved RWD organizational structure endorsed by MPW with accompanying revised pay scales. See Section 4 for a discussion of this part.

6. Compliance with Cooperative Agreement.

The following specific tasks are required by the Cooperative Agreement:

a. A time-phased program for achieving completion of planned subproject activities - submitted and approved by USAID in October 1981.

b. Survey procedure instruments and criteria enabling the RWD to select subprojects attempting to place responsibility for initiation and surveys at the village level.

TransCentury has developed a procedure for preconstruction surveys and these are turned over to the RWD before final decision is made to go ahead. The last part of this clause is not completely clear; however, RWD's criteria for selecting villages include many political and other criteria over which we have no influence.

c. Appropriate plans, specifications, and cost guidelines for subproject design with an effort towards subproject standardization, realistic cost estimates and implementation plans for each.

These are being developed and have all been discussed more thoroughly above.

d. A program of research and testing to improve the quantity and quality of water.

The quality of water is tested before and after construction. The yield test presently consists of measuring the flow (for springs) and questioning villagers about the lowest flow in the dry season; for the well tests, the pump testing equipment arrived in January. Before that, TransCentury was testing with existing pumps and may have been obtaining inadequate information. However, they have now agreed with the MPW to upgrade the quality of these tests.

e. Sample sub-agreements for subprojects complete to the extent required for AID approval. These were submitted to USAID June 1981 and approved.

f. Supervision and monitoring of all aspects of subproject execution including procurement, construction and testing.

This is being done.

g. Design and execution of training programs at the village level. Villagers are being trained on-the-job in simple maintenance. One villager will be sent to the WHO/RWD course in maintenance and repair of pumps.

h. Assistance to the RWD in developing a task-oriented and functional organizational structure and in recruiting and placing staff personnel.

This has been discussed above (Section 4) along with proposed revisions.

i. Establishing training goals and plans for the RWD based upon long-term needs.

Discussions have been held with the Minister, Deputy Minister and Director of RWD concerning training needs and long-term goals. When a COP is in place, these will be crystallized.

j. Designing and executing formal and on-the-job training programs for the RWD staff.

On-the-job training is on-going, as described previously. The first formal program will be in concrete usage and is scheduled in the work plan to take place March - May 1982.

k. Establishing a coordinating committee to coordinate activities among all donors.

This activity should be dropped, as this is not an appropriate service for TransCentury to perform and TransCentury does not have the staff to organize this kind of activity. The UNDP seems to be moving into this role and is a more appropriate agent for coordination.

l. Consultant services as may be required to achieve the general objectives of the project.

TransCentury has used consultants in training, design work, and temporary chief of party.

m. Designing and executing project evaluations in cooperation with AID and the YARC.

This is a joint evaluation undertaken by TransCentury, USAID and the RWD.

ANNEX I

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Oct 10, 1981
By: DJG

Time Phase Implementation Plan (FY-82)

I Sub-Project Identification and Design Activity

This activity consists of the following elements and estimated time requirements.

	Action/Time
1. Identification of geographical area for new sub-projects (in groups of 3 to 5 sub-projects)	RWD / 3 to 6 weeks
2. Site reconnaissance by TC/RWD/Village Rep/LDA	RWD / 1 to 2 weeks
3. Selection of 3 to 5 sites for field survey from site reconnaissance.	RWD / 1 to 2 weeks
4. Field survey to include investigation of water source, water quality, construction requirements, rough const. costs, base operation, Village and LDA needs. Report to RWD for recommended sub-project site work.	TC / 1 to 3 weeks
5. RWD approval of sites for sub-project construction.	RWD / 1 to 2 weeks
6. Detail-Design cost estimates, preparation of pre-construction report, soil tests, foundation, material sources, Village agreement, submission of report to RWD.	TC / 4 to 8 weeks
7. Review of Pre-Construction Report by RWD	RWD / 1 to 4 weeks
	12 weeks to 27 weeks

*These activities can proceed concurrently with the start of construction of one or more sub-projects.

For FY-82 it is planned that 15 sub-projects would be identified, surveyed, designed and approved for construction.

SWA-0044
Oct 10, 1981
By: DJG

Time Phase Implementation Plan (FY-82) Cont.

II Sub-Project Construction Activity

This activity consists of the following elements and estimated time requirements.

	Action/Time
1. Preparation of Village agreement (from pre-construction report), translation and typing in Arabic, Village signing, LDA signing, RWSD signing.	RWD/TC / 2 to 6 weeks LDA/Village
2. Mobilize to site, locate sub-project site house/ room, warehouse, complete required local procurement to start work, assign construction teams, contract for labor or construction with LDA approval as needed.	LDA/TC / 1 to 4 weeks
3. Construction; aggregate delivery, processing intermediate agreements, procurement, materials to site, concrete mixing, steel, pipe, trenching, pipe laying; agreements signed for subsequent phases.	TC/Village / 4 to 24 Contractor weeks
4. Complete construction, as built plans, close out site, RWD inspects/approves	TC/RWD / 1 to 3 weeks
	8 to 37 weeks

For FY-82 it is planned that the 5 sub-projects, Bayt Al Fagih area, carried into FY-82 will be completed on or before May, 1982. Construction work would then shift from the Tihama during the hot months of May - August to five sub-projects in the hill area and that by the end of FY-82(Sept. 30, 1982) a minimum of 5 more sub-projects would be completed and 5 more under construction (Tihama or elsewhere) that would be carried into FY-83. This targets a completion of a minimum of 10 sub-projects during FY-82, considering the present staff level and project budget.

SRWJ-0044
Oct. 10, 1981
By: DJC

Time Phase Implementation Plan (FY-82) Cont.

III Project New Technology Application

This phase of the project for FY-82 is planned to include the following elements:

1. For the FY-82 program of 5 on-going sub-projects and new construction starts on up to 10 sub-projects, a minimum of 13 sub-projects will be designated for new technology application. This will be coordinated with RWSD and maybe in cooperation with WHO. New technology could be:
   1. Use of gunite application for cistern construction. (Project gunite equipment to arrive 2 qtr.)
   2. Use of simple water treatment technology for water quality control, such as slow-sand filter.
   3. Use of modular or pre-cast tank sections.
   4. Contracting locally for sub-project construction with TC acting as engineering supervisors.
2. Application of information from "The Benefit of Rural Water Projects: An Impact survey five villages," to the design and construction of future water system sub-projects as appropriate.
3. Institutional development targets of opportunity as result of visit, review, idea denigration from TC Project Manager visit during the 2nd and 4th quarter of FY.

IV Personnel

This activity consists of the following elements:

1. The project starts FY-82 with the following staff:
   a) TC Professional: Teamleader
      Design Engineer
      Field Engineer
      Construction Supervisor
      Administrative/Deputy Teamleader
   b) TC Yemeni Technicians(field) - 5
   c) TC Yemeni Administrative(office) - 2
   d) TC Yemeni Administrateve - part-time - 4

41

Mini Three Implementation Plan (FY-82) Cont.

e. Peace Corps Volunteers: Technicians - 6
(including one C.E. Engineer graduate)

2. During the period Oct 20 - Nov 20 five additional technical staff are to be assigned to the project by RWSD: 1-mechanic
1-pipe fitter
3-construction technicians

3. During January, 1982 from 2-4 additional TCVS technicians may be assigned to the project.

Total project staff level starting the 2nd qtr. of FY-82 will be:
5 professionals
6-10 TCVS technicians
5-7 TC Yemeni technicians
3-5 RWSD technicians
Total: 14 to 22 technicians. (assigned in teams of 2-3 personnel for 5 to 7 construction teams, supervised and trained by the 5 TC professional staff.)
This will allow sub-project design and construction activities to proceed concurrently on 3 to 5 sub-project sites.
Note: Yemeni holidays, EID etc, Ramadan, and staff leave time effectively reduces project personnel availability 20 during any normal 230 work day year.

V Project Training and Institutional Development

The project through TC is charged with carrying the following training and Institutional development activities:

1. On the job training (Ref. Coop. Agreement
2. Short term training to Yemen (Coop. Agreement)
3. Identifying and recommending candidates in RWSD for U.S. or third country long term training (Coop. Agreement)
4. Implied review and Institutional Development of RWSD organization (Coop. Agreement/letter agreement)

Under the FY-82 Implementation Plan, TC plans to undertake the following activities in conformance with the above:

48

SR#-0044
Oct 10, 1981
By: DJG

Time Phase Implementation Plan(FY-82) Cont.

1. Using the TC professional staff as instructors, PCV's, TC Yemeni technicians and working with the project assigned RWSD technicians, "on the Job training" will be conducted at the sub-project design and construction sites. "On the job training" will bever the following technical areas:
   1. Site survey for small system design
   2. Water source investigation and yield test
   3. Water quality sampling and testing
   4. Construction operation set-up/recording
   5. Construction aggregate materials selection and quality processing.
   6. Concrete mixing, placing, slump tests, cube sampling/testing
   7. Steel placement, bending, clearances
   8. Concrete form work, tanks, boxes
   9. Job safety
   10. Pipe fitting, threading, layout, placement
   11. Pipe trenching, backfilling, leak testing
   12. Vehicle and equipment operation and safety
   13. Gunite operations (3 to 4th qtr. FY)
   14. Waste water control.
   15. Blue print reading

   Through a "rotational assignment", TC Yemeni technicians and RWSD technicians will receive "otjt" in the above areas.
2. Short term training assignments during the 1st and 2nd qtr. of FY-82 will be limited to those courses, where it is possible and practical, to assign TC and RWSD technicians, being conducted by AID, ODA or other appropriate development agencies. TC will plan to conduct, during the 3rd and 4th qtr. of FY-82, two short term (40 hrs) courses, one gunite construction, one in water source yield, quality, waste, basic system design for small village systems. Other USAID contractors, working in YAR, may develop and present short-term courses applicable to this project. TC, coor-

SRWT-0044
Oct 10, 1981
By: DJC

Time Phase Implementation Plan(FY-82) Cont.

dinating with USAID, will assign to the extent possible team personnel to these courses.

3. Institutional and organisational development training for FY-82 is planned to consist of the following specific action:

Subsequent to the move of TC office operations to the new RWSD offices at Hesaba (adjacent to USAID compound) TC will formally request MPW/RWSD for the assignment of one young Yemeni engineer graduate as a project laison/team leader counterpart to the project. (2nd qtr. FY)

If assigned, this counterpart would be the channel for TC to accellerate 1) sub-project site selections/approvals 2) village agreements approvals 3) pre-construction report approvals 4) Reviews of organizational policies 5) rotation of Yemeni technicians for "otjt" 6) short term training program. This counterpart would, following one year in this position, be a possible candidate for long term training in the U.S. or third country under concurrent USAID educational training programs and funds.

VI Project Review/Evaluation

This activity for FY-82 would consist of the following elements:

1. Project Evaluation by USAID/TC/RWSD

It is planned that this evaluation would be scheduled during the 2nd qtr. (January-March) of the FY and consist of a formal project review by a team of designated representatives of AID, TC and RWSD. A formal report would be prepared by AID of this evaluation. This evaluation could result in modifacation of the project implementation plan for the remainder of FY-82

2. Time Phased Implementation Plan Review

The Time Phased Implementation Plan for FY-83 will be prepared in draft in the 4th qtr. of FY-82. This FY-83 plan will be reviewed by RWSD and TC in conjunction with the FY-83 Annual Budget

Time Phase Implementation Plan(FY-82) Cont.

Review between TC and RIG. Following this review the Time Phased Implementation Plan and Annual Budget will be submitted to USAID for final review and concurrence.

VII Procurement Activity

This activity consists of the following elements and time estimates:

	Action/Time
1. Delivery of pre-shipped commodities/equipment from U.S. (1st qtr. FY-82) (air shipment) AID Custom clearance, delivery to TC	ETA Oct, 81, Sana 30 days following delivery to Sana
(Ocean shipment) Custom clearance, delivery to TC	ETA Jun, 83, Hodeidah 45 days following off loading at Hodeidah
2. Local procurement continues throughout FY-82 on a sub-project by sub-project basis, for cement, steel, pipe, pumps, etc.	TC/continually through FY-82

Note: No procurement waivers are required for local procurement during FY-82. Some direct AID, origin US country water pumps and other items will be procured off shelf for matching specific pump requirement to well yield etc. on a sub-project case by case basis. No single purchase would exceed $5,000.00, or accumulate in excess of $100,000.00 (In accordance with AID HB-11, chapter 3)

3. Additional off shore project procurement needs will be revised (2nd U.S. order) in December, 81 - January, 82 by team leader prior to project evaluation. Second procurement(surface) if required will be dependent upon findings of project evaluation. Air shipments, due to high cost,

Area Phase Implementation Plan(FY-82) Cont.

	Action/Time
will be limited during FY-82 to critically needed items, spare parts	TC / 4 weeks
Estimated ordering shipping air/prop procurement	4 months
Estimated ordering shipping surface, commodity items, C&D, binding etc.	6-8 months

VIII Project Reporting Activities

For FY-82 the project will prepare the following reports:

1. Monthly Progress Report for RSCD/RPW
   Consisting of one-two pages, in Arabic translation, due at RSCD the first week of the following month. Copy(English) to USAID, copy to TC/Amh. Prepared by TC team leader.
2. Quarterly Report due USAID/Y within the 15th of the month following the end of the FY-qtr.(by Jan 15, April 15, July 15 and Oct 15) Prepared by team senior and deputy team leader. The report covers a formalized presentation of quarterly project Construction, design activity, procurement, staffing, financial flow, training, implementation plan targets, problems etc. Distribution: RSCD/Y, USAID, TC/Amh.
3. Monthly Expenditure Reports. This report is prepared by being compiled by the administrative staff of the project on a bi-weekly basis (twice a month), 15th and end of month to record and maintain daily project expenditures to appropriate line item categories. This report is transmitted to AU Controllers office/Amh. The report is the basis for releases of funds to the project from the AID established project PRLC.
4. Annual Budget Submission. In conformance with the project annual budget review schedule and the project Annual Budget Submission is prepared in Amharic, reviewed by TC/Amh, RSCD and submitted to RSCD/Y and USAID in the month of September of the FY. The ABS reflects the projected FY project costs. The ABS is

Time Phase Implementation Plan(FY-82) Cont.

prepared by the team leader, deputy team leader/administrative officer and reviewed by TC Project Manager/Nash.

5. Revised Project Time Phase Implementation Plan. This plan is to be reviewed and modified, if appropriate, following the annual project evaluation and to be reviewed and appropriately revised, in the month of August of each FY, and submitted to RHUD/USAID with the ABS in September.

The time phase implementation plan is prepared by the team leader and deputy team leader with the assistance of the TC field engineer and construction supervisor. It is reviewed by the TC Project Manager/TC/Nash.

COMMODITY PROCUREMENT

1. Background.

The project, under the Cooperative Agreement, showed that $1,983,708 would be spent over the first three years (Phase I) of the project for Commodities ($1,643,000) and Equipment and Supplies ($340,708). Year one and two of the project budget showed an estimated expenditure of $977,500 for commodities and $298,664 for supplies and equipment for a total of $1,276,000 or 43% of the total project budget. At the end of 18 months, from the signing of the Cooperative Agreement, a total of $848,017 has actually been spent on these two items including landing costs and TransCentury staff time charged to procurement services, representing approximately 44% of total project expenditure to date of $1,910,500.

The Cooperative Agreement provided that:

a. Cement in amount of US $250,000 may be purchased from 935 source and origin countries. However, all cement for the project is procured off-shelf Yemen, due to storage life limitations.

b. TransCentury may procure goods and services in Yemen (off-shelf) up to the total amount of the AID contribution, pursuant to AID Handbook 1, Chapter 18, Local Cost Financing. TransCentury is procuring certain pipe, fittings, hardware, lumber and services off-shelf Yemen, origin 941 countries, source Yemen.

c. TransCentury may purchase 15 motorcycles for the project from Code 935 countries (Japan). The project purchased one motorcycle and then eliminated any further purchases of motorcycles for the project due to (1) restrictions on foreigners using motorcycles over 50 kilometers outside Sanaa and (2) motorcycles were found to be incompatible and not useful for project implementation.

d. Up to nine U.S. manufactured vehicles may be purchased in Saudi Arabia or the YAR. The project purchased one Chevrolet vehicle from Saudi Arabia and three Chevrolet vehicles direct from the U.S. Additionally, the project received a waiver from U.S. AID to purchase eight small 4-WD Japanese vehicles. This waiver was requested by RWD through TransCentury due to the low-cost of operation of the Japanese vehicles, spare parts availability and the fact that the size of the vehicle allows its use in the narrow passages, and alleys of the village. The U.S. Chevrolet vehicle has all of the above handicaps in operation. All vehicles for the project have now been purchased, 12 vehicles and one motorcycle.

U.S. procurement activity started at TransCentury/ Washington in August 1980 following the signing of the Cooperative Agreement in July 1980. At that time, lists and specifications of tools, equipment and commodities were prepared. Following the signing between TransCentury/YARG of the Letter of Agreement January 20, 1981, TransCentury proceeded to start project procurement of U.S. commodities and supplies.

Procurement, following AID regulations, took place over the period of February - August 1981 with TransCentury using a procurement agent. Items were consolidated on the east coast of the U.S. during August-September-October 1981 for air and surface shipment to Yemen during November 1981-January 1982. At the time of this evaluation (February 1982), 95% of all project commodities have arrived at site in Sanaa and are stored in the RWD warehouse.

2. Costs.

The costs of commodities, supplies and procurement services up to January 30, 1982 are:

PERIOD	COMMODITIES/ SUPPLIES	TC PROCUREMENT SERVICES HOME OFFICE
Aug-Dec 1980	49,280	5223
Jan-Mar 1981	99,788	3946
Apr-Jun 1981	260,428	3664
Jul-Sep 1981	158,210	2386
Oct-Dec 1981	168,189	2478
		Bonding 71,000
Jan 1982	22,872	553
	$758,767	18,250

$758,767	Commodities/Equipment/Fee/Shipment	= 89%
$ 18,250	Procurement Services (TransCentury)	= 2%
$ 71,000	Bonding (refundable item)	= 9%
$848,017		100%

The commodity costs include:

a. Inland transportation from the manufacturer or supplier to the consolidation shipment point in New Jersey.

b. Seven percent (7%) procurement fee paid to the procurement agent.

c. Third party bond (1%).

d. Warehousing and receiving at consolidation point.
Air freight/legal fees and insurance to Sanaa.
Sea freight, U.S. to Hodeidah.
Custom clearance (Yemen).
Transportation to Sanaa from Hodeidah.
Fees.
Transportation to project site (Sanaa to village).

3. Findings.

a. For any commodities procured in the U.S., it will cost an additional 50% to 60% to get these commodities to the project site (village subproject site).

b. A second tranche procurement in U.S. would require a 12-month lead-time for procurement and delivery to Sanaa, Yemen by surface.

c. If additional U.S. procurement is considered, it is recommended that it be limited to (1) needed spare parts of American equipment, (2) specialty items such as fordillah faucets, etc., and (3) be shipped by air freight (New York to Sanaa).

d. If bulk surface shipment of U.S. materials is considered, it could consist of:

(1) Fordillah faucets = 400

(2) Valves

(3) Two-inch and 2-1/2 inch pipe

(4) Couplings

PROJECT IMPLEMENTATION VIS-A-VIS THE WORK PLAN

Project implementation is tied to the FY 82 Project Implementation Plan. During the evaluation, the FY-82 work plan was reviewed and specific comments were made by the Ministry of Public Works/ RWD, USAID and TransCentury.

The following describes the implementation activity sequence with comments made by the evaluators for changes or modifications.

1. Design Activity.

This activity covers:

a. Identity of subproject (village) sites by RWD for TransCentury to start the preliminary design work. Identity is the sole responsibility of the RWD. Delays in identity of sites by RWD have been a recurrent problem for TransCentury. It was agreed that the RWD would now provide to TransCentury not less than 10 site identities at one time. TransCentury would then complete an office review and possible preliminary site review and select those sites that provided (1) geographical grouping, (2) highest population served, (3) adequate accessibility, and (4) adequate water source.

b. Field survey water source yield and testing. The second step of the design is to field a survey team to determine pump, pipe requirements, storage capacity, distribution needs and water source quality and quantity. The RWD expressed concern that the TransCentury water source yield testing procedures were not adequate, especially for well testing. More care and detail is to be applied on subsequent water source yield tests. As the project has now received well testing equipment, well tests can now be conducted in a more precise manner.

c. The third step of the design is for TransCentury, at the Sanaa Central Office, to develop the full system design, prepare a preconstruction report, prepare the cost estimates for the system (direct and village contributions) and submit these data to the RWD.

TransCentury requested that they have access to previously prepared WHO/RWD designs that may apply to a specific subproject and that the facilities of WHO/RWD be available to complete this step of the design process.

The MPW stated that TransCentury would have access to any WHO previously developed design material applicable to a site, but that WHO resources would not be available for any new design development for a site.

d. The fourth step, following submission of the preconstruction report to the RWD, is for TransCentury to get the verbal approval of RWD to proceed with the construction of the system. This entails preparation of the LDA-village agreement which defines (1) the village contribution, (2) direct project funding for completing the site construction and (3) cost of the subcontract for construction using local Yemeni contractors.

The MPW/RWD stated that they would be a party to approval of any subcontracting activities at site. In the past, the local LDA and TransCentury controlled this approval. TransCentury agreed to this new procedure. In the interest of time, if approval is to be at the RWD level, it is absolutely necessary for the RWD to provide a full-time project counterpart to the team leader to negotiate village agreements and subcontract agreements.

The follow-on maintenance of the system will, in those cases where the LDA has an existing capability to do maintenance and repair such as Beit Al-Faqih, be the responsibility of the LDA. Villagers are trained during construction in pipe, valve and tap installation and repair. No training at site is given to the villagers in tank construction, pump installation or engine operation. Villagers can be selected by the LDA/RWD for training in Sanaa by the RWD/WHO in a short course (four weeks) in pump and engine maintenance. The project does not provide funds for this training nor does the project select participants for this training.

2. Findings.

From the review of the FY 82 Implementation Plan of project implementation, the following was agreed:

a. The RWD would provide subproject site locations in groups of at least 10 to TransCentury.

b. TransCentury would improve their procedure and method of well testing to assure that an adequate supply of water exists for the system being installed.

c. The RWD will provide to TransCentury any WHO prepared design data applicable to any of the subproject sites.

d. The RWD will approve all subcontracting agreements applicable to any part of the site system construction.

e. TransCentury will consolidate procurement of materials to cover a group of subproject site construction requirements.

f. A follow-on system operation and maintenance will be covered by on-the-job training of villagers, LDA capabilities and RWD selection of villagers for training at the WHO/RWD pump/engine course given in Sanaa.

ANNEX IV

New TransCentury Foundation
P.O. Box 377
Sanaa, Yemen Arab Republic

TELEPHONE 73884
TELEX 2421 PAN YE

RURAL WATER SUPPLY PROJECT

مؤسسة ترانس سنتشري
ص . ب . ٣٧٧
صنعاء ، الجمهورية العربية اليمنية
تلفون : ٧٣٨٤
تلكس : PAN YE ٢٤٢١
مشروع توزيع مياه الريف

THE BENEFIT OF RURAL WATER PROJECTS:

An Impact Survey of Five Villages

Prepared by:

Christine Ansell, Consultant
For New TransCentury Foundation
under contract to U.S.A.I.D.
Contract No. AID/NE-CA-1647
Project No. 279-0044
October, 1981

NOTE: This report is available at TransCentury Foundation, Washington, DC.

ANNEX V

Diane P.

UNITED STATES GOVERNMENT

Memorandum

TO : 044 File and distribution (below) DATE: Feb 20, 1982

FROM : Tom Dichter PCD/Yemen

SUBJECT: Summary of project meeting with 044 PCVs at PC/Yemen's conference Feb. 17 & 18, 1982

On Wednesday Feb 17, 1982 I held a meeting with all the 044 PCVs (9 of them) to review the project and get feedback on it from the PCVs' perspective. Project meetings were held during our conference with PCVs in all our other projects as well.

Without doubt, the 044 PCVs are a dedicated, the happiest, most satisfied, most [illegible] about professional and responsible [illegible] I've seen today. There is a striking absence of problems brought to PC Staff's attention. What minor problems they do have they automatically seem to take up with Transcentury staff. One gets the impression however, that they work out their problems by themselves and/ or amongst themselves. One PCV, during our meeting, scratched his head towards the end of the hour and remarked that he felt guilty that the group did not have anything of a dramatic nature to bring to me as director, wondering if perhaps I might feel unnecessary as a consequence of the group having little they needed from me.

There are several ways to explain the above situation. First, I believe very strongly that Peace Corps Yemen's efforts over a year ago to institute a special recruiting effort for this project have paid off handsomely. At that time (Summer '80) AID/Y and Transcentury Corp. with PC/Y put an extremely capable ex Yemen PCV on the recruitment effort for this project. The goals were two: a) to generate a pool of more qualified candidates in three areas, agriculture, water & sanitation construction supervision, and b) to ensure that candidates thus recruited would have acquired a highly realistic information about Peace Corps, Yemen, and the Project before making their final decision. During my consultation in Washington in April, 1981 I met with the head of placement and recruiting to further convince them that this effort should be continued. I should note that PC/W resists such special efforts, since, obviously it does not fit with either their present recruiting system nor their overall philosophy, "Generally the only

Best Available Document

61

good PCV is the PCV who's willing to go anywhere and do anything". PC/W has to this day a strong group of staff members who are against recruitment [illegible] on a country specific, much less project specific basis. I believe the successes of our 9 project 044 PCVs should be noted in PC/[illegible] counterargument to that philosophy.

A second important set of reasons for the success of the project in Peace Corps' eyes has to do with the nature of the project and the good timing of the PCVs' entry into it. This project addresses a real need in Yemen, one that has not heretofore been met by any other project - namely the construction of water systems to small villages. In recent weeks for example, part of the Transcentury team (including 3 PCVs) has been working in the Dawran-Anis area, a relatively remote, relatively unmodernized, relatively poor area. Water projects including spring box construction, storage tank construction, and pipe systems are underway in three small villages, one of which has a population of at most 150 people. These villages would not have even a rudimentary water system without this project. PCVs perceive this very clearly and this goes a long way towards accounting for a sense of being useful. Furthermore, the project is extremely challenging, in some instances technically, but more often in terms of the problems encountered in relations with the villagers. For example, in one village, the villagers resisted contributing their labor to the project. This has caused delays but the Transcentury team's approach to the problem has generally been a patient and creative one. In other villages, team members are constantly asked to extend the pipelines to the individual houses, something that is not the project's scope. These kinds of day to day problems with the technical challenges offer the PCVs an unusual [illegible] of experiences and give them a very realistic feel for the [illegible] of development. If Peace Corps' overall goals include that of training future leaders in the world of [illegible] development, a project like this one is accomplishing a lot.

[illegible] this project were also lucky enough [illegible] to have [illegible] on the day they got [illegible] language training. [illegible] part a function of lucky planning on the part of [illegible] Transcentury. Unlike other projects, PCVs in this case [illegible] from not being clear as to what their jobs were, [illegible] business.

Finally, a third set of reasons for PCVs' high morale in the project lies with the nature of the Transcentury staff in the country. This staff, consisting of Don Boyer, Mike Sullivan, Jack Henry, Tony Shindley and others, is unusually responsive to the Peace Corps Volunteers. They have stuck to making it clear that Volunteers are full employees of the project and as a result there is a very professional balance of privileges and obligations. Volunteers are expected to work hard, and are given very real responsibility. In two cases, within one month of their arrival, PCVs were totally in charge of individual sub projects and met the challenge very willingly.

To sum up, the 044 projec meeting c [illegible] to [illegible] as a text book summary of the id[illegible]l si[illegible] for PC/s in the 1980s, both in terms of PC/AID joint [illegible] in development, as well as in terms of the kinds of [illegible]tions that PCVs thrive on.

PC/W

cc: Jody Olson, Regional Director,
Bill Dant, Women Desk Officer,
Charles Ward, Director USAID /
Diane Donasik, RD USAID/Women
Ambassador Zweifel, Suva's

KEY EVALUATION PARTICIPANTS

Ministry of Public Works (MPW)

1. Jamal Abdu, Deputy Minister
2. Abdel Bari Saleh, Director of Rural Water Supply Division, MPW
3. Abdel Wahab Siraji, Advisor/Engineer, MPW
4. Mahdi Mohammed Mahadi, Project Manager
5. Abdel Allah el-Malik Bader, Director of Drilling, Hydrology Department, MPW

Central Planning Organization (CPO)

Taher Ali Saif, Director-General, Technical Assistance Programs

USAID/Yemen

1. Dr. Diane Ponasik, Project Officer
2. Theodor E. Bratrud, Jr., Evaluation Officer
3. Le Young, USAID Engineer

External Evaluator

Frank Pavich, USAID/Mogadishu

TransCentury Foundation

1. Dave Cephart, Acting Chief of Party, Engineer
2. Joe Moyer, Administrative Officer

ANNEX VII

Revised March 6, 1982

MINUTES OF MEETING

SUBJECT: Small Rural Water Systems Project (AID Project No. 279-0044) Evaluation

PARTICIPANTS: Representatives from the following (a list of actual representatives is found at the end):

Yemen Arab Republic - Ministry of Public Works (MPW) including Rural Water Supply Dept.

Central Planning Organization (CPO)

TransCentury (TC)

USAID

LOCATION: Ministry of Public Works, Sanaa

DATE AND TIME: February 8, 1982 and March 1, 1982

The following major points were investigated during the evaluation of the Small Rural Water Project:

1. What is the implementation activity sequence now being followed by TransCentury?

   a. Design Activity.

      (1) Identity of subproject (village) sites by RWD for TC to start the preliminary design work. Identity is the sole responsibility of the RWD. It was agreed that the RWD would now provide to TC not less than 10 site identities at one time. TC would then complete an office review and possible preliminary site review and select those sites that provided (a) geographical grouping, (b) highest population served, (c) adequate accessibility, and (d) adequate water source.

      (2) Field Survey Water Source Yield and Testing. The second step of the design is to field a survey team to determine pump, pipe requirements, storage capacity, distribution needs and water source quality and quantity. The RWD expressed concern that the TC water source yield testing procedures were not adequate, especially for well testing. More care and detail is to be applied on subsequent water source yield tests. As the project has now received well testing equipment, well tests can now be conducted in a more precise manner.

      (3) The third step of the design is for TC, at the Sanaa Central Office, to develop the full system design, prepare a preconstruction report, prepare the cost estimates for the systems (direct and village contributions) and submit these data to the RWD.

The MPW has agreed that TC would have access to any WHO previously developed design material applicable to a site. However, in cases where no design exists, it will be the responsibility of TransCentury alone to develop the designs.

(4) The fourth step, following submission of the preconstruction report to the RWD, is for TC to get the approval of RWD to proceed with the construction of the system. This entails preparation of the LDA-village agreement which defines (a) the village contribution, (b) direct project funding for completing the site construction, and (c) cost of the subcontract for construction using local Yemeni contractors.

The MPW/RWD stated that they would be a party to approval of any subcontracting tenders at site. In the past, the local LDA and TC controlled this approval. TC agreed to this new procedure. In the interest of time, if approval is to be at the RWD level, it is absolutely necessary for the RWD to provide a full-time project counterpart to the team leader to negotiate village agreements and subcontract agreements.

The follow-on maintenance of the system will, in those cases where the LDA has an existing capability to do maintenance and repair such as Beit Al-Faqih, be the responsibility of the LDA. This will be detailed in the subproject agreement. Villagers are trained during construction in pipe, valve and tap installation, and repair. No training at site is given to the villagers in tank construction, pump installation or engine operation. Villagers can be selected by the LDA/RWD for training in Sanaa by the RWD/WHO in a short course (4 weeks) in pump and engine maintenance. The project does not provide funds for this training nor does the project select participants for this training.

b. <u>Construction Activity</u>.

(1) With all village agreements and subcontract agreements executed, TC mobilizes the construction teams to the site and starts construction. The MPW/RWD stated that local procurement of materials to start site construction should not be done on a site by site basis. A consolidated list of material needs must be prepared for six to eight sites and then procured using the MPW tendering procedure.

Site construction is completed. The system is tested and operated for 1 month and then a final inspection of the work is made by TC/RWD and local village and LDA representatives and the system turned over to the villagers. An as-built plan is provided to the village, LDA and the RWD by TC.

As this final step of inspection and turnover to the village is a sensitive procedure, TC stated that again it is essential to have a RWD counterpart on site to carry this through.

2. Personnel

Project staff level, as part of the implementation plan was reviewed and discussed. The plan level of 25 field staff will be maintained. TC requested that RWD now assign three more technicians and one full-time counterpart to the project in order to maintain the level of training and institutional development planned under the project, and more pressing and critical to provide in the case of the RWD counterpart, a direct RWD involvement, decisionmaking presence at the project operation level.

3. The Role of TransCentury.

YARG representatives made comments indicating that the exact role of TC remains unclear. A comment was made that it was believed that TC's role was essentially one of consultants, but if this were so, it is not possible or practicable that they construct the subprojects themselves. The question was posed as to what the current method of operations is and whether it is the best way to implement the project?

A TC representative clarified the current situation, noting that from May to August 1981, design work was done with TC beginning construction "as a contractor" in August. Since then TC has moved more and more into subcontracting, where TC acts only as construction supervisor.

4. Village Participation.

In general, the village contribution consists of labor, including digging trenches, laying pipes, providing aggregate by hauling gravel, screening sand, etc. To a query about the experience to date of availability of such unskilled labor, the reply was that it has varied from village to village but has been generally good so far. It was noted that the average direct costs (i.e., exclusive of personnel and other overhead costs) for a subproject so far (eight subprojects) has been about U.S. $40,000 and that it is estimated that the village contribution has averaged an additional 20 to 30 percent (i.e., equivalent ($8,000 to $20,000 additional). The evaluation has confirmed that generally participation has not been a problem.

Number of Subprojects.

TransCentury stated that, based on their present experience, 55 projects by September 1984 is their goal.

6. Procurement Source.

TC noted that procurement source should be examined during evaluation, indicating that savings could be made if the sources were not so restrictive. It was noted that restrictive sources were common in grant projects like this one.

Findings

From the above review, the following was agreed:

(1) The RWD would provide subproject site locations in groups of at least 10 to TC.

(2) TC would improve their procedure and method of well testing to assure that an adequate supply of water exists for the system being installed.

(3) The RWD will provide to TC any WHO prepared design data applicable to any of the subproject sites.

(4) The RWD will approve all subcontracting agreements applicable to any part of the site system construction.

(5) TC will consolidate procurement of materials to cover a group of subproject site construction requirements.

(6) A follow-on system operation and maintenance will be covered by on-the-job training of villagers, LDA and RWD selection of villagers for training at the WHO/RWD pump/engine course given in Sanaa. The subproject agreement will include LDA designation of a villager for this training course.

(7) The MPW/RWD will provide a full time counterpart to TransCentury by June 30, 1982. TC will provide a technically qualified chief of party by June 30, 1982.

A P P R O V E D

Date: 10 Mar 82

[illegible] Aldo
[illegible], MPW

Date: 10 Mar 82

Robert W. Beckman
Deputy Director, USAID

LIST OF PARTICIPANTS:

MINISTRY OF PUBLIC WORKS --

Mr. Jaral Mohammed Abdo, Deputy Minister

RURAL WATER SUPPLY DIVISION --

Mr. Abdul Bari Saleh, Director General
Mr. Mahdi Mohammed Mahdi, Project Manager
Mr. Abdul Allah al-Malik Nader, Director of Drilling
Mr. Abdul Wahab al-Seraj, Advisor

CENTRAL PLANNING ORGANIZATION --

Mr. Taher Ali Saif, Acting Deputy Chairman

TRANSCENTURY --

Mr. David Gepharit, Acting Project Manager
Mr. Joe Moyer, Administrative Manager

USAID --

Dr. Diane S. Porasik, Project Manager
Mr. F. L. Young, General Engineering Advisor
Mr. Theodor Bratrud, Program Officer
Mr. Ahmed Jowas, Program Officer
Mr. Frank Pavith, USAID/Somalia (Former Project Manager)
Mr. Zachary M. Hahn, General Development Officer, Chief

PEACE CORPS --

Dr. Thomas Dichter, Director

.69