

PD-A44-679-81

498-0257

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PROJECT PROPOSAL
FOR
RURAL POTABLE WATER SYSTEMS

Prepared for USAID Consideration by
CARE - Korea

1. OBJECTIVES

A. General Objectives

Small clustered villages have grown since the Korean War into relatively large towns of between 5,000 and 10,000 inhabitants. Little or no planning occurred in the expansion of these villages and facilities for community services such as potable water, are, for the most part, non-existent. At present, only 12.7 per cent of rural Korean villages have potable water systems.

Individual households have either dug private wells or are forced to rely on the supply of water from a common source such as community wells or directly from nearby streams or rivers. These sources are often contaminated and are the primary cause of minor as well as major health problems.

The Government of Korea has recognized this problem and have estimated that 60 billion Won (\$123,900,000) is needed over a 30 year period to install potable water systems that would remedy the above situation. While this allocation of funds is fairly extensive it is not adequate to meet the total need of all these towns over a reasonable period of time. Present projections by the Government of Korea call for the installation of 400 potable water systems a year over a 30 year period.

The Government has stated that there are 1,346 towns with populations of between 5,000 and 10,000 inhabitants to be covered under this program.

The Grantee proposes to construct a minimum of three potable water systems a year, for a three year period, in those towns with populations of 5,000 to 10,000 that are chosen to participate in the project. The actual number of systems constructed and villages to be serviced will be dependent on the amount of funds made available to the Grantee. If additional funds are made

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available for succeeding years the number of systems constructed could be increased.

The Grantee will consult with Provincial and County Governments concerning the selection of villages to be considered for inclusion in the program. The actual villages chosen through this process will then be investigated by CAPE and an initial survey conducted so as to insure that an actual need exists that can be met with sufficient funding by the parties involved. The Grantee has set a minimum participation factor of 50 per cent as the number of households that must be connected to the system at the time of construction. It is anticipated that the number of subscribers will increase after the system proves successful and the changes in health due to potable water availability become known. Every precaution will be taken to prevent the exclusion of poorer villages over those that might be considered to be economically more desirable.

The results of the initial survey will be discussed with Provincial and County Officials before a final selection is made.

Each system will be composed of a pumping station, a filtration unit, a chlorination unit, a holding tank (hydrostatic head) and PVC piping. At the time the system is constructed those households which elect to be connected to the system will do so at their own cost. The system will be constructed so as to insure that any household within the area encompassed by the system can be provided with potable water. When the demand for potable water increases it will be the Government's responsibility to modify the water system to accommodate that demand. The systems will be constructed to allow for expansion with minor modifications.

The completed Potable Water System will be administered by a committee elected by the users. This committee will be responsible for screening all complaints and suggestions prior to communicating with the County Government.

who will bear fina. responsibility for the proper maintenance and operation of the system. A fulltime supervisor will be hired by the County Government to oversee the daily operation of the system and to insure the proper maintenance of the equipment and to periodically check on the potability of the water provided by the system.

Each household which subscribes to the system will pay a monthly fee which will be determined by a water meter paid for by the subscribers. This money will be used to pay the County Government to offset the monthly charges for electricity, maintenance, and the salary of the fulltime supervisor. The water committee will meet with the County Government quarterly and review the expenditure of the monies collected.

After completion of the water system CARE will provide the services of a health educator whose duties will be to enlighten the beneficiaries as to the value of potable water and proper household and environmental sanitation. It is expected that one meeting a month will be held for one year. In addition to a formal monthly meeting, the health educator will make home visits in order to involve residents in practical demonstrations of proper water sanitation. The health educator will also go into the schools and discuss household and environmental sanitation with school children. All of these activities will be coordinated through Water Committee which will be expected to support, induce, and encourage community participation in the educational aspect of this program.

B. Detailed Project Description

1. Construction of Potable Water Systems

The Grantee and concerned County and Provincial Government personnel will select a minimum of three sites a year in towns with populations between 5 and 10,000 inhabitants. These towns will be surveyed in order to determine that a year-round water supply exists (including planned

town populati expansion) and that it is feasible to develop the water source. A sanitary survey of each site including bacteriological and chemical tests will then be conducted and the turbidity, colour and threshold odour of the water will be ascertained.

The Grantee will then request the Government to appoint a licensed engineer to draw up a complete set of plans and blueprints indicating the materials and equipment necessary to construct the water system. At least three bids will be solicited for and the lowest bidder will be chosen to construct the system after consultation with the County Government. Any sub-contracting will be approved by the Grantee and the Government officer in charge.

All construction and equipment will be examined by the Grantee and the Government appointed engineer to insure that it meets the standards as specified in the approved survey. The Government engineer must certify that all equipment supplied is as contracted. The Grantee must be advised in writing concerning any changes in the specification of any materials or equipment supplied by the contractor. Approval of these changes will be sanctioned by the Grantee only after receiving a written statement from the Government appointed engineer that any changes will not be detrimental to the success of the project and that such changes will in no way adversely effect the project.

The completed system will be examined by the Grantee and the Government appointed engineer at such time as the contractor informs the parties involved that all work is completed. It is anticipated that each system will take approximately four to six months to complete after the contractor has been appointed. When the system has been inspected and approved, and is determined to be functioning properly, it will be officially turned over to the County Government whose responsibility it is to insure proper

continued maintenance and operation.

The County Government must agree to operate and maintain the system so as to insure the supply of potable water to the subscribers for no less than a minimum of 12 hours per day, 365 days a year. Any disruption in the supply of water for more than a 48 hour period must be reported to the Grantee for a period of two years after the system becomes operational. All expenses involved in the operation and maintenance of the completed system are the obligation of the County Government.

2. Sanitary Education

The Grantee recognizes that the supply of potable water is only one step toward the decrease of illness in the community. In order to achieve the desired health impact it is necessary to educate the water subscribers and potential subscribers in proper sanitation. A recent health survey indicated that 75 per cent of acute health problems were infectious and parasitic in nature. Intestinal parasites proved to be a health problem for 60 per cent of the rural population. Many infectious and parasitic diseases are caused by impure water which is used in the household.

The provision of potable water will not completely remedy the above situation unless people are educated as to the simple precautions and corrective measures which can be taken to insure that once the potable water is piped into the house that it remains pure until it is used for the purpose intended. Since it is common to store water in Korean homes until it is needed, the risk of it becoming re-contaminated is increased. Also, many vegetables commonly used in the household are infected with parasites and must be properly cleaned before serving. Other simple precautionary measures can be taught to housewives so as to insure that their families are not infected with parasites traceable to food and beverages.

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The Grantee proposes to begin sanitary education classes, in the villages covered by this Grant, as soon as an agreement is signed by the villagers. The classes will be conducted by a qualified Public Health graduate whose duties will be to hold at least one monthly meeting for a period of at least a year in each of the towns in which a potable water system is constructed. The sanitary education field workers duties will also include home visits and instruction in the relationship between clean potable water and the maintenance of proper health standards. The health education worker will contact teachers in the village school and develop educational presentations that will be aimed at teaching children the benefits of potable water and the health problems attributable to improper sanitation. This activity, as well as other activities concerning the health education component, will be coordinated with the village Water Committee.

As an outgrowth of this project the sanitary education field worker will assist CARE's regular Family Planning and Nutrition Education field staff at mothers meetings where the subject of proper sanitation will be discussed. These meetings are currently held in over 500 Day Care Centers in all areas of Korea and are attended by approximately 15,000, mothers each month.

The Grantee will also produce suitable printed educational material to be given to each householder that is contacted. The sanitary education field worker will use this material as a teaching aid during meetings.

3. Establishment of Permanent Institutional Capacity

The Grantee will assist in the formation of a water committee composed of water system subscribers. This committee will be directly responsible for the day to day operation of the water system and will be responsible for advising the County Government and Grantee of any dissatisfaction with the system and/or malfunction of the system.

The Grantee anticipates that other towns will be able to observe the successful operation of completed potable water systems and will raise the necessary funds which will allow the local County Government to undertake similar projects without the assistance of foreign agencies.

4. Financial Obligations

(a) The Grantee will appoint a Korean Project Officer under the supervision of an American Director and/or Deputy or Assistant Director to oversee all aspects of the project. The Grantee will use Grant funds to purchase construction materials, water system equipment, and to pay the salary and expenses of the Korean project officer as well as other operational costs (see Section III).

Upon receipt of dollar grant funds, the Grantee will transfer those funds required to CARE/Korea where they will be converted to Korean won as required. Material and equipment procured locally under this Grant will be purchased in adherence with provisions of this Grant. The Grantee will retain title to any material or equipment purchased with Grant funds until the successful completion of the project at which time title will be transferred to the County Government. In the event that any project is unsuccessful and fails to meet the specification as detailed in the original contract and survey and the County Government is unable to provide funds to correct the deficiencies, the Grantee reserves the right to determine the disposition of "all material and equipment purchased" either with Grant or CARE funds.

(b) The County Government will be responsible for all labour costs involved in the construction of each project. In addition, any and all costs in excess of the monies contributed by the Grantee will be paid by the County Government. It is expected that the County Government will solicit funds from the water system subscribers as well as the Provincial Government in order to meet a portion of the costs involved.

In the event that these funds prove to be inadequate it will be the responsibility of the County Government to provide the balance of funds necessary to complete the project.

The Grantee anticipates that it will be necessary to employ the services of a qualified hydrologist/mechanical engineer on a full time basis.

His services will be paid for from grant funds. A qualified Government Engineer will be appointed and paid by the County Government. It will be their responsibility to approve the survey report of project feasibility and estimated costs prior to the signing of a contract with the Grantee. They will also be directly involved in all phases of project implementation and will be responsible for all technical aspects of the project.

The County Government will be responsible for the daily operation of the project and the collection of monthly water fees from the water system subscribers. All maintenance fees and any replacement of equipment will be paid by the County Government.

5. Grantee's Experience in Potable Water System Construction in Korea as well as in other areas of the world.

CARE-Korea has constructed eleven potable water systems in Korea since 1972 and currently has one other under construction. These twelve systems have provided CARE the opportunity to gain considerable knowledge and experience in potable water system construction.

Approximately 12,000 people living in 2,303 households have already benefited from CARE's Potable Water projects.

Of the eleven systems completed since 1972, ten have been simple gravity-feed projects which have required little more than piping and a small holding tank into which chlorine is periodically added. The largest system completed to date is a modern system which includes a pumping station, filtration unit and automatic chlorinator. It is this system that CARE - Korea is using as a model for the system described in this proposal.

In addition to CARE's Korean experience, CARE has successfully constructed water systems throughout the world, in Africa, Asia and Latin America. CARE's Headquarters in New York has a Program Department from which it is possible for CARE-Korea to draw on if additional information is necessary. As stated in Section 4(b), if Grant funds are made available for this project a full time engineer will be requested from CARE Headquarters to supervise all aspects of the planning and construction phases of the project. CARE - Korea is of the opinion that the experience gained to date through their involvement with water projects and the assistance that is available from their New York Headquarters, will be sufficient to properly administer and implement the proposed project.

C. Evaluation

Prior to the start of each project the Grantee will conduct an initial survey and employ those persons necessary for its successful completion. During a period not less than twelve months after any given system is completed, the grantee will conduct a final survey to determine the impact of the system and measure any changes in knowledge, attitudes and practices by the subscribers in regard to proper sanitation associated with the use of potable water.

REPORTS

The Grantee will provide the following reports in duplicate to USAID Korea:

- (1) A trimester project progress report which will detail the progress to date and Grant funds spent.
- (2) At the completion of each water system a project completion report will be prepared and a statement will be submitted from the County Government, Engineer and CARE that all materials contracted for, have been delivered and that the system functions as per the provisions of the original survey.

III

ESTIMATED BUDGET

	<u>First Year</u>	<u>Second Year²</u>	<u>Third Year²</u>	<u>Total</u>
<u>USAID</u>				
Material and Equipment ¹	90,500	108,600	130,500	329,600
Surveys	8,000	9,500	11,400	28,900
Education P & O	6,400	7,800	9,200	23,400
Professional Services	17,300	20,700	24,900	62,900
CARE Hqs. Operational Costs	<u>7,800</u>	<u>9,400</u>	<u>11,200</u>	<u>28,400</u>
Sub-Totals:	130,000	156,000	187,200	473,200
<u>CARE Generated</u>				
Material and Equipment	294,700	353,600	424,100	1,072,400
P & O	60,000	72,000	86,400	218,400
Survey and Labor	25,500	30,600	36,700	92,800
Land	1,500	1,800	2,200	5,500
Equipment Rental	<u>9,000</u>	<u>10,800</u>	<u>13,000</u>	<u>32,800</u>
Sub-totals:	390,700	468,800	562,400	1,421,900
Sub-total:	520,700	624,800	749,600	1,895,100
Five Percent Agency	<u>26,000</u>	<u>31,200</u>	<u>37,500</u>	<u>94,700</u>
Total:	546,700	656,000	787,100	1,989,800

1. Includes 50% of the cost of a new vehicle and operational and maintenance costs.

2. Second and third year estimates have been increased by 20% which is the anticipated rate of inflation.

* All figures have been rounded off to the nearest 100.

473,200
1,514,600

A. The above budget is illustrative only and the Grantee is bound only by the total dollars made available by AID and CARE hereunder.

B. The total amount requested by this grant is U.S.\$473,200 for the period July 1976 - June 1979. These funds may be attributed to any of the above budget categories

IV. CARE will be expected to operate in the field with no administrative or logistic support from the U.S.AID mission or the Embassy. CARE will consult as requested with U.S.AID/W and with U.S.AID personnel in Korea. In addition to submitting reports as requested under Article II.

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS																																		
<p>1. Program or Sector Goal: The broader objective to which this project contributes:</p> <p>REDUCE THE INCIDENCE OF WATER BORN DISEASES IN SELECTED KOREAN VILLAGES</p>	<p>5. Measures of Goal Achievement:</p> <p>EXPANSION OF RURAL WATER SYSTEMS AS INCORPORATED WITHIN THE THIRD FIVE YEAR ECONOMIC DEVELOPMENT PLAN 1972-1976 (GROK PUBLICATION 1971)</p>																																		
<p>2. Project Purpose:</p> <p>INSTALL POTABLE WATER SYSTEMS IN RURAL VILLAGES IN KOREA.</p>	<p>6. Conditions indicating purpose has been achieved:</p> <p>NUMBER OF HOMES WITH POTABLE WATER. POTABILITY OF WATER VERIFIED. NUMBER OF HOME VISITS BY PUBLIC HEALTH WORKER.</p>																																		
<p>3. Outputs:</p> <p>NINE WATER SYSTEMS CONSTRUCTED OVER A THREE YEAR PERIOD</p> <p>SANITATION EDUCATION PROGRAM</p> <p>FORMATION OF POTABLE WATER COMMITTEE(S)</p> <p>QUANTIFIABLE HEALTH DATA OBTAINED</p>	<p>7. Magnitude of Outputs:</p> <p>NINE SYSTEMS COMPLETED IN THREE YEARS. CUBIC METERS OF WATER PROCESSED THROUGH SYSTEM. PRODUCTION AND DISTRIBUTION OF PRINTED MATERIAL. NUMBER OF WATER COMMITTEE AND SANITATION EDUCATION MEETINGS. INTERVIEW BENEFICIARIES CONCERNING HEALTH.</p>																																		
<p>4. Inputs:</p> <table border="0"> <tr> <td colspan="2">USAID</td> </tr> <tr> <td>Material and Equipment</td> <td>329,600</td> </tr> <tr> <td>Surveys</td> <td>28,900</td> </tr> <tr> <td>Education P & O</td> <td>23,400</td> </tr> <tr> <td>Professional Services</td> <td>62,900</td> </tr> <tr> <td>CARE Headquarters</td> <td></td> </tr> <tr> <td>Operational Costs</td> <td>28,400</td> </tr> <tr> <td></td> <td>Sub-total 473,200</td> </tr> <tr> <td colspan="2">CARE GENERATED</td> </tr> <tr> <td>Material and Equipment</td> <td>1,072,400</td> </tr> <tr> <td>P & O</td> <td>218,400</td> </tr> <tr> <td>Labor & Survey</td> <td>92,800</td> </tr> <tr> <td>Lend</td> <td>5,500</td> </tr> <tr> <td>Equipment Rental</td> <td>32,800</td> </tr> <tr> <td></td> <td>Sub-total 1,421,900</td> </tr> <tr> <td>Five percent contingency</td> <td>94,700</td> </tr> <tr> <td>TOTAL</td> <td>2,990,000</td> </tr> </table>	USAID		Material and Equipment	329,600	Surveys	28,900	Education P & O	23,400	Professional Services	62,900	CARE Headquarters		Operational Costs	28,400		Sub-total 473,200	CARE GENERATED		Material and Equipment	1,072,400	P & O	218,400	Labor & Survey	92,800	Lend	5,500	Equipment Rental	32,800		Sub-total 1,421,900	Five percent contingency	94,700	TOTAL	2,990,000	<p>8. Implementation Target (Type and Quantity)</p> <p>APPROXIMATE COST PER SYSTEM \$221,100. COST OF NINE SYSTEMS \$1,989,800. TARGETED BENS. 45-50,000. EQUIPMENT: PVC PIPES, FILTRATION UNITS, HOLDING TANKS, ELECTRIC PUMPS, PIPE FITTINGS, CEMENT, IRON BARS, ETC.</p>
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MEANS OF VERIFICATION

IMPORTANT ASSUMPTIONS

9. SURVEYS TO DETERMINE REDUCTION IN INCIDENCE OF WATER BORN DISEASE

13. Assumptions for achieving goal targets:

IMPROVEMENT OF WATER SYSTEMS CONTINUES TO BE PART OF THE FOURTH FIVE YEAR PLAN. IMPROVEMENT OF HEALTH IS RELATED TO THE SUPPLY OF POTABLE WATER.

10.

INSPECTION OF DAILY LOG BOOK AT PUMPING STATION.
WATER METER READINGS

14. Assumptions for achieving purposes:

TECHNOLOGY EXISTS FOR CONSTRUCTION OF SYSTEMS.

11.

COMPLETED SYSTEMS INSPECTED AND APPROVED.
QUESTIONNAIRE ADMINISTERED TO WATER SUBSCRIBERS TO DETERMINE KAP.
ACTIVITIES OF WATER COMMITTEE
EVALUATIVE SURVEYS

15. Assumptions for achieving outputs:

THREE SYSTEMS A YEAR CAN BE CONSTRUCTED.
EDUCATION LEVEL OF SUBSCRIBERS ADEQUATE TO ABSORB SANITATION EDUCATION INFORMATION.
LEADERSHIP AVAILABLE FOR WATER COMMITTEE TO FUNCTION PROPERLY.
HEALTH DATA CAN BE SUCCESSFULLY COLLECTED, VERIFIED, AND ANALYZED.

12.

CARE SUPERVISION OF CONSTRUCTION.
REPORTS AND EVALUATION OF SYSTEMS COMPLETED AS PER USAID AND CARE GUIDELINES.

16. Assumption for providing inputs:

ADDDUATE RESCURES AVAILABLE FROM ALL PARTIES INVOLVED.

PRIOR ACTION

FIRST QUARTER

SECOND QUARTER

CVE
1. REVIEW APPLICATION FROM BENEFICIARIES.
2. DEDUCE CRITERIA FOR SELECTION.
3. VISIT PROPOSED SITE.
4. APPROVE APPLICATION FOR ASSISTANCE.

U.S.AID
1. REVIEWS CVE'S CPC PROPOSAL.
2. APPROVES CPC.
3. SIGNS AGREEMENT.

BENEFICIARIES
1. IDENTIFY NEED FOR FMS.
2. FORM WAGER COMMITTEE.
3. CONTACT GOVERNMENT CONCERNING FUNDS.
4. APPLY TO CVE FOR ASSISTANCE.

GOVERNMENT (PROVINCIAL COUNTY)
1. APPROVE REQUEST BY BENEFICIARIES FOR FUNDS.

MONETARY FLOW

INITIAL SURVEY BY CVE (1)

ENGINEERING SURVEY (3)

APPROVAL BY CVE (4)

BASIC AGREEMENT SIGNED AND FUNDS COMMITTED (5)

CONSTRUCTION PROGRESS

ALL FUNDS DEPOSITED IN BANK (2)

CONTRACTOR CHOSEN FOR MATERIALS (6)

PURCHASE CONTRACT SIGNED (7)

MATERIALS DELIVERED (9)

CONSTRUCTION BEGINS (10)

APPROVAL BY GOVERNMENT ENGINEER (4)

CONTRACTOR CHOSEN FOR CONSTRUCTION (5)

FIRST YEAR

INITIAL SURVEY: \$ 4,200
P & O: 24,000
\$ 28,200

SECOND YEAR

INITIAL SURVEY: \$ 5,000
P & O: 28,600
\$ 33,600

THIRD YEAR

INITIAL SURVEY: \$ 6,000
P & O: 24,600
\$ 30,600

P & O: \$ 24,000
M & E: 231,100
\$ 255,100

P & O: \$ 28,900
M & E: 265,300
\$ 294,200

P & O: \$ 34,600
M & E: 218,400
\$ 253,000

THIRD QUARTER

FOURTH QUARTER

DESIGN AND

FEDERAL REPORT
ON CONSTRUCTION
(15)

CONSTRUCTION
COMPLETED (12)

SYSTEM AND
WATER TESTED
(13)

OPERATION
COMPLETION
(14)

TOTAL

P & O:	\$ 74,000
M & E:	221,100
	\$ 295,100

P & O:	\$ 20,800
M & E:	265,300
	\$ 286,100

P & O:	\$ 34,800
M & E:	318,400
	\$ 353,200

EVALUATIVE	
SURVEY:	\$ 4,200
P & O:	26,100
	\$ 30,300

EVALUATIVE	
SURVEY:	\$ 3,070
P & O:	28,900
	\$ 31,970

EVALUATIVE	
SURVEY:	\$ 6,000
P & O:	24,300
	\$ 30,300

SURVEY:	\$ 8,400
P & O:	96,100
M & E:	462,200
	\$ 566,700

SURVEY:	\$ 10,000
P & O:	115,400
M & E:	520,850
	\$ 746,250

SURVEY:	\$ 12,000
P & O:	138,300
M & E:	626,800
	\$ 776,100

GRAND TOTAL: \$1,989,800