PD-AAV-333

UNITED STATES GOVERNMENT

memorandum

DATE: November 1, 1984, FHD 84.500

REPLY TO ATTN OF: Herbert Caudill, Jr. FHD
Environmental Health Engineer

SUBJECT: Evaluation of Water Supply & Sanitation Component of Health Loan - Response to Recommendations

TO: Dr. Kenneth Farr, Health Officer

USAID/Quito has now received the final report of the evaluation performed by WASH of the Water Supply and Sanitation component of the Rural Health Delivery System Loan. Included in the report, beginning with page 67, there are 26 recommendations. Following are the recommendations with the action I feel the Mission should take:

Mid-Project Meeting

Recommendation 1: AID should convene a mid-project meeting of SEDRI, IEOS, JRH officials from both the Central Office and provincial offices to discuss:

- Problems encountered to date in each institution
- Progress to date on model development efforts
- Progress to date on cost reduction efforts
- Planning for organizational relationships in the future
- Role of each institution once the RWSS system is operational

Comments: USAID has already initiated action in this respect, and a meeting was held with SEDRI, IEOS, and Quimiag-Penipe IRD officials in April to address above issues. Results of the meeting were positive. The five issues included in the recommendation were all addressed. The Evaluation Report compares the speed of implementation of AID projects funded through CARE, directly through IEOS, and through SEDRI. Those funded through CARE were built most efficiently, those through IEOS next, and the slowest were those funded through SEDRI. There are many interinstitutional coordination problems that have slowed down project. There are so many approvals and clearances required to process a reimbursement request that IEOS runs out of funds long before replenishment arrives, and therefore projects are paralyzed. While this is the main issue, the meeting concluded in that everyone would try to do better next time. The new officials at SEDRI have expressed a desire to clear up bottlenecks. A similar meeting is being planned for Salcedo, and another one for Jipijapa once the responsibility of WS&S is transferred from JRH to IEOS in that IRD area.

*** Proposed Action: A mid-term meeting has already been held in the Quimiag-Penipe IRD. Similar meetings are planned for the Salcedo and Jipijapa IRD's, in accordance with the recommendation.

Long-Term Operation and Maintenance

Recommendation 2: The Project needs to give a high priority to defining a policy for the operation and maintenance procedures that are to be followed once the proposed systems are constructed. The policy needs to define: 1) what will be the responsibilities and duties of the local operators; 2) what will be the role of each of the elements (i.e., paraprofessional, promoter, engineer, etc.) and levels (i.e., local, provincial, central, etc.); 3) how will each level be prepared for its functions; and 4) what types of long-term training mechanisms will need to be established to carry out the desired functions.

Recommendation 3: AID and IEOS should re-examine the concept of establishing a maintenance backup system at the provincial level using the mobile maintenance units called for in the Project Paper. Such a system must be designed to support and/or backup the local authorities in their operation and maintenance efforts. As a result of this re-examination by IEOS, the Project should prepare a maintenance plan that will use the pickups that have already been provided, or the Project should request USAID to drop the mobile maintenance van concept. To do this the Project must clearly define how local operators will be given operation and maintenance backup by the provincial and/or central levels of IEOS. For example, if the mobile van concept is dropped will the backup function be the responsibility of the promoters, the engineers or the paraprofessionals? Where will spare parts and materials be stored? In what quantities? What type of long-term training activities will be carried out to ensure that maintenance is done?

Comments: There are two distinct problems of operation and maintenance (O&M) that need to be addressed separately. One is that of complete water systems which include a source, treatment to some degree, a storage tank, a distribution system, and household connections. Ecuador's system is a model for other countries: A local water board is created at the village level called the Junta Administradora de Agua Potable. This Junta has legal status, charges user fees, hires O&M personnel, and generally supervises the upkeep of the system. In those rare events when the villagers cannot cope with O&M problems, the IEOS provincial office is available, and the appropriate technical type (promoter, engineer, plumber, etc.) assists the villagers. There have been few problems with this system, and what difficulties there are do

not stem from the concept but from other circumstances. The second O&M problem which is somewhat more difficult to handle is that of village hand pumps. The loan agreement provides for the purchase of maintenance vehicles for those provinces where hand pumps are being installed. The maintenance vehicles were purchased, but are currently being used as supervision vehicles. The reason for this is that IEOS does not wish to get directly involved in the O&M of hand pumps, as it is a never-ending task. IEOS's current thought is that minimum maintenance (greasing of pins, etc) can be done by villagers. For more complex repair procedures, much attention is being given to a model established in the Colta area of Chimborazo. There are approximately 80 hand pumps installed in the area, and the Indian Evangelical Association has three technicians who can repair the hand pumps. Villagers have a hand pump committee which collects a small fee (generally 5 sucres per household per month) for the use of the pump. When repairs are required, the technicians are called, and they charge for spare parts, their meals, and 100 sucres each per day. Most repairs are accomplished within half a day.

*** Proposed Action: No changes will be made in the O&M approach now being followed for water systems, as existing model is working well. For hand pumps, the Colta model will be tried in other areas of the country where these are being installed. The "IEOS-operated maintenance vehicle" concept will be abandoned. Training of village O&M personnel, an activity in which IEOS is already involved, will continue.

Water Quality

Recommendation 4: The team recommends that the Project should ensure that IEOS establishes a mechanism to take and test periodic bacteriological water samples and to report back results to the local health authorities.

Recommendation 5: The team recommends that the Project should develop a continuous series of water quality workshops and/or job aids to train promoters and inspectors (mainly at the Provincial level) in the techniques and procedures for water testing and the follow-up actions that must be taken when changes in water quality are found.

Recommendation 6: It is recommended that the objectives of the water quality effort should be: 1) periodic bacteriological testing; and 2) continuously conducted sanitary surveys as the minimum surveillance activity.

Comments: The above three recommendations are good and a long-term effort is currently being made in that direction. Eight portable bacteriological testing kits were purchase by the Project for use at the provincial level. The purchase was

followed by a course in the use of the equipment for promoters in those provinces where the equipment was to be installed. Since IEOS is the local health authority in matters of environmental sanitation, simply doing the testing and recording the results satisfies recommendation 4.

*** Proposed Action: The above recommendations are being and will continue to be implemented.

Commodities

Recommendation 7: IEOS should establish procedures for ensuring that the drivers understand that vehicles should be loaded in relation to their weight capacity and not the volume available in the cargo area. A load chart should be placed in each driver area for ready reference.

*** Proposed Action: After several initial problems overloading vehicles, drivers have now been made aware of vehicle weight limitations, and thus no further action is required.

Recommendation 8: Within the Direction of Basic Rural Sanitation, IEOS should organize a "Small Village Water and Basic Sanitation Unit" (SVDWBS). The staff of the SVDWBS Unit, while part of the Direccion, would be a Task Gropup exclusively dedicated to the work of the Project. Similar Task Groups would have to be formed at the provincial level. The objective of the task group would be to evaluate the experience to date, and then develop a coordinated set of criteria, manuals and instructions for the institutional model that IEOS should follow in the future. Day-to-day construction matters would be handled by the Direccion staff. The members of the unit at the national and provincial levels would serve as the core group for integrating the proposed scheme into IEOS once the project is over.

Comments: The main objective of Project was to develop IEOS to such an extent that it could better carry out its mandate. A coordination unit was indeed created at first, but once IEOS recognized its value, it was elevated to one of three National technical directorates under the supervision of the IEOS Director. This was a welcome development that exceeded original expectations, and will ensure replication of successes from the current AID project.

*** Proposed Action: This recommendation is contrary to the orginal intent of the Project and will not be followed.

Decentralization

Recommendation 9: The Project should concentrate its future efforts to assist IEOS in decentralizing, so that the activities are at the provincial level in the following functions: 1) developing system designs using paraprofessionals to do groups of villages under an engineer's supervision; 2) contracting out the civil works in groups of villages to one contractor; and 3) conducting training efforts for village juntas/operators in administration, operation and maintenance techniques.

Comments: AID has made a major effort to promote decentralization. At AID's insistence, IEOS doubled the number of paraprofessionals in the IRD provinces as a CP for loan implementation. Contracting out civil works (storage tanks, spring catchments, etc.) is now standard procedure throughout IEOS. AID sponsored a village operator training course in Santo Domingo in 1983, and more such courses are planned. In addition to the above, IEOS raised purchasing authority of provincial chiefs from 50,000 sucres per contract to more than 600,000 sucres, giving them a great deal more control over project implementation. Much of the institutional building effort has been geared toward the provincial offices.

Proposed Action: The above recommendation is being and will continue to be implemented. There is full agreement with this recommendation, as this has been the focus of our effort from the beginning of project implementation. Groups of civil works are contracted out when convenient. Most projects are in remote, rural areas and are contracted out to small masons.

Training

Recommendation 10: Based on the experience to date the Project should: 1) conduct a review of the efforts (such as workshops, in-service courses, and seminars) expended for training and then determine the areas yet to be covered; 2) develop a long-term, continuous training plan for the Project; 3) request the services of a professional to help evaluate the training efforts to date and oversee the implementation of a comprehensive training program which would include long-term training for paraprofessionals; and 4) consider using a limited number of fellowships for groups of paraprofessionals, engineers and administrators (mainly from the provincial offices) to observe RWSS programs in other countries. This should be done as a carefully planned and organized program rather than on an individual ad hoc basis.

Comments: IEOS's Departamento de Promoción y Educación has constantly been reviewing training programed under the Loan. The Project Paper envisioned limiting training to sending four IEOS engineers to receive master's level training in the US, and training of paraprofessionals. Instead, the following training plan has emerged, which has the full concurrence of AID: 1) Expanding the training to paraprofessionals. Two courses have already been held, training 20 in each. A third course is programed for early 1985 for 40 additional new paraprofessionals. 2) Instead of sending IEOS engineers for master's level training abroad, a selected group of five engineers were sent to Lima, Perú for a course on appropriate technology in water supply programs. Also, a course was held in Quito by University of North Carolina staff for utilizing micro computers in the design of water supply and sanitation systems in developing countries for 12 selected engineers. IEOS is currently investigating other similar short-term courses in areas that will enhance IEOS's capability of dealing with WS&S in rural areas. 3) Providing training to village-level operators in WS&S systems O&M. These plans are constantly being reviewed by IEOS. As for the fourth item in this recommendation, eleven IEOS officials travelled to Panama prior to implementation of Loan to observe WS&S constructed there under AID projects. The visit was very productive.

Proposed Action: The IEOS Departamento de Promoción y Educación Sanitaria has reviewed all of the training that has taken place to date under Project sponsorship and has determined that, based on the success of promotor and village operator training, more of this type of training will take place. A program to train 40 new promotores is scheduled to take place early in 1985. Additional training of village opertors is now being programed. Item 4 (sending a group of people on observation trips abroad) was done prior to the implementation of the project and yielded favorable results. No further trips of this nature are planned.

Low-Cost Technologies

Recommendation 11: AID should help focus IEOS's attention into national and provincial level activities that seek out and clearly identify such cost-saving techniques, equipment and/or activities as could be tried out as a Project activity. Each idea, concept and/or approach should be reviewed by a joint IEOS/AID committee to find those that will: 1) have the highest cost reduction impact; 2) make the greatest use of currently available human and technical resources; and 3) require the lowest investment of time and money. Those passing the committee should be field tested. Once tested, the concept should be disseminated throughout the Direccion for incorporation into the day-to-day work. The goal of this effort should be to establish a series of successful cost reduction measures.

Comment: That low priority has been given to the problem of developing low-cost technologies is simply not true. The very example given of what should be done, i.e. contracting groups of civil works and wider utilization of paraprofessionals, are precisely two of the more successful cost cutting approaches that have been implemented. The recommendation that a committee be established to "brainstorm" cost cutting ideas is impractical.

*** Proposed Action: A major effort is underway to construct WS&S systems in the Oriente, Sierra and Coast, utilizing Grant funds (See PIL 18), to experiment with new, low-cost technologies. Three such systems are about complete in Napo Province, and one is complete in Pichincha. Other projects will be constructed during 1985. Testing equipment has been purchased and is in place to evaluate effectiveness of new systems. At the same time, IEOS provincial chiefs in other provinces have been advised to report any innovative designs to the National Directorate of Rural WS&S at IEOS/Quito for further investigation.

Hardware

Recommendation 12: The Project should review the various devices being considered and give priority attention to a limited number of them. The selection of the devices to be chosen should be based on:

- Increase of user convenience
- Impact of user's personal hygiene habits
- Progress made on current local manufacturing efforts
- Cost of support/maintenance mechanism in money and person power.

These criteria would tend to indicate that the Project should increase its handpump and household water filter efforts.

*** Proposed Action: The above recommendation is being and will continue to be implemented. A final evaluation of each new device will be made at the end of the project for replication to other areas of the country. Following is a brief summary of the new technologies that have been developed:

- WATER SEAL LATRINES: These are being manufactured in Riobamba, Ambato, and Latancunga, and are widely used in all projects, including non AID-funded projects. User acceptance is excellent. This technology can be considered a success.

- HAND PUMPS: Hand pumps have been manufactured successfully in Ecuador and are now installed in various parts of the country. The new, steel hand pump developed by Georgia Tech also offers great potential for local manufacture.

- ROBO-SCREENS: Local fabrication was successful. The 2-inch version of the robo-screen was especially useful in springs to screen out sand and other particles. It is currently being used.

- HOUSEHOLD CERAMIC WATER FILTERS: After initial manufacturing problems, development of the filter continues with greater hope for success. MAP International, a PVO, is proceeding with this development effort.

- ROBO-VALVES: Abandoned. While local fabrication was a success, social acceptance of valve on the part of villagers was not good, and therefore not worth pursuing.

Water Systems

Recommendation 13: The team feels that the AID sanitary engineer should assist IEOS to examine and reorient the construction phase of the Project so that system delivery rates will allow for meeting project goals. The areas that should be examined are: greater use of paraprofessionals and/or promoters; greater use of contracts for civil works; development of a material purchasing system that will allow for warehousing quantities of materials vs. the current method of system purchasing.

*** Proposed Action: This recommendation is already being implemented.

Recommendation 14: The team feels that the Project should develop a mid-term workshop for provincial engineers and promoters to 1) examine experience to date, 2) develop plans for accelerating current construction rates, and 3) develop plans for institutionalizing the long-term operation and maintenance needs of IEOS in this area. An outside consultant should be used to serve as a catalyst for this effort.

*** Proposed Action: Present instability of IEOS is not conducive to such a meeting right away. Such a meeting will be scheduled in the future.

Recommendation 15: In view of the rising cost of the meters that are currently being used to control waste, IEOS should examine alternative methods of controlling wastage. The team suggests that greater attention should be given to user education techniques and approaches to prevent water loss and/or misuse.

Comments: IEOS as well as AID officials are fully aware of the high cost of meters. Many other alternatives have been tried out in other countries as well as in Ecuador without much success. The best appeal to the water user to control his water consumption so far seems to be to meter the use of water and charge him accordingly. (Americans started using less gasoline when the price went up.)

*** Proposed Action: AID will continue to work with IEOS in the analysis of alternatives to water meters.

Recommendation 16: The team recommends that in order to obtain and maintain the highest quality of water for the user, IEOS should develop a drinking water sampling program using the bacteriological test equipment that has been delivered to the provincial offices. This effort should be coupled with a continuous program of sanitary surveys conducted by the promoters.

Comments: IEOS presently has a water sampling program that is acknowledged to be inadequate. Excellent laboratory facilities exist in Quito and Guayaquil. However, distance of villages from these centers make transportation of water samples very difficult and results are frequently meaningless because of the age of the sample. Portable testing equipment is good, but reagents and materials are expensive.

*** Proposed Action: This recommendation basically repeats recommendations 4, 5, and 6. Refer to comments on those recommendations.

Recommendation 17: The team recommends that IEOS should re-examine the legislation concerning the use of contracts for the civil works (i.e. storage tanks, pump stations, etc.) in the project systems, especially where the use of skilled labor is required.

*** Proposed Action: IEOS is currently contracting civil works in the provinces where AID is working.

Latrines

Recommendation 18: The Project should make a survey of latrine usage for such factors as: 1) nearness to water source for flushing and hand washing; 2) nearness to house; and 3) elevation up or down from the user's house, and use this information to develop criteria for future type and location of latrines.

*** Proposed Action: AID will assist IEOS in reviewing more closely location of latrines.

Recommendation 19: The Project should work with the local manufacturer to improve the finish so that it will be less pervious and much smoother. These steps would help to reduce odors.

*** Proposed Action: IEOS is currently working with manufacturers of water seal latrines in order to develop a less porous surface utilizing a polishing procedure which is a traditional craft in Ecuador.

Recommendation 20: The Project should study the consequences (e.g. greater water usage) and impact of adding a water flush tank to the current pour-flush toilet.

*** Proposed Action: Current IEOS thinking is that if the homeowner wishes to add a tank to his latrine, that is fine. IEOS will even provide any necessary technical assistance. Estimates of water demands when projects are designed are high, thus allowing for increasing demand. Increments in water consumption due to more sophisticated toilet flushing mechanisms will not overtax water systems.

Maintenance

Recommendation 21: The Project should review the short and long-term need for the mobile maintenance vans. If it is decided not to place them in service, the Project should ensure that: 1) the paraprofessionals and promoters are given training in simple repair techniques; and 2) there is a provincial level capacity for assisting the village operator where there is a problem that exceeds the capability of the operator or the promoter to solve.

*** Proposed Action: This issue is fully discussed in recommendations 2 and 3.

Recommendation 22: The Project should ensure that IEOS establishes a unit for training village juntas and operators in system operation and maintenance. This effort should involve an on-going series of in-service courses for groups of villages and should have periodic refreshers at which new materials would be introduced.

*** Proposed Action: This is already being done by the "División de Educación y Promoción Sanitaria" of IEOS. The first course was held in 1983 in Santo Domingo de los Colorados. Other similar courses will be held in 1985.

Recommendation 23: The team recommends that the Project work more closely with IEOS to 1) identify those techniques that have resulted in high degrees of community participation and/or stronger juntas and 2) find ways to institutionalize the more successful approaches.

*** Proposed Action: Community participation was described in the report as one of the most outstanding features of the program. This recommendation recommends what is already being done.

Recommendation 24: The Project should have a consultant help IEOS develop innovative financing schemes that will allow all the potential users of a system to be able to connect at the time of startup. For example, a small revolving fund for house connections could be financed. Such efforts should take into account the limited financial measures of each family vs the need to have the broadest possible coverage in the shortest time. During the remaining period of the Project, IEOS should try out and then institutionalize those schemes that will increse coverage.

*** Proposed Action: In order to maintain the integrity of the community participation system, it is essential that those who do not wish to cooperate be penalized. Establishing mechanisms to provide water for those that refused to provide labor during the construction phase would be contraproductive. In any case, experience shows that eventually most of the community connects to the system, and therefore obtains the desired health benefits.

Recommendation 25: IEOS should design and conduct a continuous program for teaching the individual users the elements of personel (sic) hygiene and individual system maintenance. This effort should make maximum use of audiovisual, radio and TV techniques and channels.

Comments: IEOS was given two mobile, audio-visual units by IDB, which are fully equipped with projectors, and other equipment needed for health education. Under the project, they are purchasing a variety of films that can be used for this purpose.

*** Proposed Action: IEOS is presently following this recommendation.

Recommendation 26: While the prevention of unnecessary loss of excessive water usage is one of the goals of IEOS' using a water meter, the team feels that the cost of this solution is reducing the number of systems that can be built. The team recommends that IEOS consider assigning one promoter in each province as a waste control expert. This person, who will be paid for out of the funds saved by not installing meters, would be responsible for working with the junta to prevent leaks and excessive usage. Such a person would make maximum use of simple communication techniques such as radio, plays, and graphics.

*** Proposed Action: Given the limited human resources of IEOS at the provincial level, it is not possible to provide full-time personnel to control waste. So far, the most effective measure is to force the user to pay for the amount of water used. (See comments on recommendation No. 15).

General Comments:

The terms "promoter" and "paraprofessional" are used in the Evaluation Report as two distinct individuals. In the context of AID/IEOS, they are one and the same.

The term "civil works" refers to water storage tanks, spring captations, pump houses, etc. that are part of a water system, but are constructed as separte entities.