

ENVIRONMENTAL HEALTH STRATEGY STATEMENT
Water Supply, Excreta Disposal, Hygiene
Education, Community participation,
Operation and Maintenance, and Technology
Transfer Aspects of Rural Health Delivery
Systems

Between 27 April and 16 May a 3 person expert team knowledgeable in the environmental health aspects of rural integrated health delivery systems reviewed and closely examined the current environmental health situation of the MOH/IEOS rural integrated health delivery system. The purpose of the detailed examination was to provide USAID/Ecuador with a technical and managerial perspective of the existing environmental health aspects in terms of conclusions and strategic recommendations for mission investments into the rural integrated health delivery system for the next few years. Mr. Charles Binco, Dr. Rifat Barokas and Mr. Victor W. R. Weisman Jr. performed the examination and assessment.

As a result of extensive professional discussions with management, planning and operational staffs of the Ministry of Health and the Ecuadorian Institute of Sanitary Works and as a result of 4 days of field trips into about 15 small rural communities in Cotacachi, Tungurahua, Chimborazo and Pichincha Provinces, the following conceptual and strategic conclusions were reached:

1. The MOH and IEOS are extremely interested in increasing their capabilities to plan, design, promote, supervise construction, organize operation and maintenance systems for small rural water supply systems and for water seal latrine installations and programs. They are interested (very interested) in obtaining technical assistance to learn how to plan, design, & construct simpler and less costly systems. They are very interested and need much training in hygiene education (environmental health aspects) and in improving the ability of their Mestizo promoters to interact and promote rural integrated health activities other than just water systems. At all levels of discussion there was uniform interest in technical assistance and cooperation in improving these aspects of their current integrated health delivery system. By providing appropriate expert technical assistance in a timely fashion, the USAID/Ecuador can fantastically improve the capability of IEOS personnel to be able to work in a more inter-disciplinary or much more integrated approach to the rural health delivery system. IEOS personnel for the first time will be able to work professionally in such subject areas other than just water supply and sewerage. At the same time by providing MOH sanitary inspectors, physicians, health educators and community health workers with a working knowledge of environmental health techniques and promotional/training approaches the MOH personnel will much better understand the work and techniques that the IEOS do in their daily work. The training of the IEOS engineers, health educators, and promoters ~~should~~ in integrated rural environmental health techniques should greatly facilitate their understanding of the MOH rural health delivery system problems and provide a common basis for interest and communication between the two organizations.

2. The desire by the MOH and the IEOS to work on rural programs is the result of an official Ecuadorian position ~~xxxxxxx~~ or directive to enter into significantly increasing and accelerating investments and commitment of manpower and logistics into the rural areas of the country in the form of integrated rural development projects or programs involving several different Ministries ~~or~~ Agencies. This is supposed to be translated into action by the MOH and IEOS by increasing significantly their investments into the rural areas in ~~xxxx~~ both curative and preventive medicine interventions. Since the new Government inherited a sizable national debt upon coming into office, there has been a considerable belt-tightening on funds available in 1980 to all of the Ecuadorian institutions. Most of the Agencies are receiving from one-third to one-half the actual funds that were programmed in the 5 year plan for 1980. This has resulted in new investments being drastically reduced to maybe 15% of what was ~~xxxx~~ originally contemplated and resulted in most of the MOH/IEOS funds being used to shore-up the urban and rural curative health delivery system. Currently there is a freeze on the hiring of new personnel in the two Agencies as a result of Ministry of Finance directives:

What this means is that the MOH/IEOS are highly interested in accelerating activities in the rural curative and preventive medicine areas but they definitely lack the funds ~~xxxxxxx~~ and the augmented manpower to train and implement operational programs in the rural areas. USAID/Ecuador can be of great assistance to the MOH/IEOS at this time by providing well developed technical assistance and increased logistical and training resources to the organizations at a certain critical "bottle necks" to greatly improve the capability of the Ecuadorians to cope and accelerate their activities in the rural health delivery system. The manpower and logistics "bottlenecks" that need to be addressed with a first priority are the following:

A. IEOS national level organization needs reorganization to develop a completely self-sufficient (from technical standpoint) Rural Water Supply and Sanitation/Training Division that focuses and operates only on rural systems. The Division needs to be augmented to a rural projects staff totaling about 31 interdisciplinary staff and should be provided with about 14 4 wheel vehicles to do its rural projects not only in Quito but throughout the 20 provinces. This "bottleneck" requires a slight administrative reform within the current IEOS organization but ~~is~~ was already being proposed by the IEOS in conjunction with a BID loan/grant in November 1979. The IEOS planning director and Sub-Secretary are favorably inclined to the organizational change. This reorganization would allow the development of a Division that could (with appropriate technical assistance) plan, design, supervise construction, promote, and train in many areas of environmental health (not just in water and sewers) and have the resources to develop simpler techniques and practices for working in the rural areas that are much less costly and more effective in the longrun from an operation and maintenance and community development standpoint.

B. IEOS provincial level organizations need significant reorientation to rural type projects and increases in technical, managerial, training and promotional personnel and logistics (vehicles) in order to cope with extremely rugged and dispersed rural community service requirements. This translates into significant augmentations into the IEOS manpower for civil/sanitary engineers, health educators, geo-hydrologists, socio-cultural anthropologists, training personnel and promoters. Each IEOS provincial unit needs a significant increase in logistics ~~and~~ for the personnel to be able to begin to cope effectively with extremely slow and rugged roads and widely dispersed rural communities desiring integrated environmental health services. Each IEOS provincial unit should receive an

augmentation of at least 13 ^{four} wheel vehicles (combination of pick-ups and carry-alls), 3 one ton, long bed, crew cab type, 4 wheel trucks and 8 motorcycles (recommend 175cc instead of 125cc because of loss of horsepower at the very high altitudes and the need for power for passing other vehicles on very narrow and curving roads. These manpower and logistics augmentations are needed now in order for IEOS to do a job that it currently has but does not have the resources to do; to be able to accelerate and improve the quality of services to the 400 to 800 small rural communities found within most of the provinces which are currently not receiving water systems; latrines, training, hygiene education, nutritional materials; etc.; and to provide the resources for the promotion and development of a large group (several hundred in each province) of planned and designed shelf projects that can be ready for other international donor organizations to take off of the shelf and enter into loans or grants for various types of rural community services interventions. The development of these augmented IEOS organizational units in three separate provinces is envisioned as an initial demonstration project to demonstrate the efficacy of the approach and its ability to catalyze and accelerate other international donor investments and improve the quality and breadth of services to the small rural communities of Ecuador. Included in the demonstration should be a reasonable amount of operational project funds to allow IEOS provincial manpower to test out their new found capabilities in the rural environment of Ecuador. Funds need to be their for some construction, some training, some operation and maintenance, some promotion, some project design and planning, etc. The augmented manpower and logistics also needs to result in a capability within each of the provinces involved to develop an reliable, professional and expedient project design and planning capability with the IEOS provincial unit, i.e., to eliminate the need for IEOS provincial personnel to have IEOS/Quito personnel have to get involved in project preparation, design, promotion and the obvious delays that result. The goal of the IEOS provincial unit should be to go from request for rural services to initiation of construction or training within 3 months.

C. MOH provincial level organization needs significant manpower augmentation, logistic augmentation and training and reorientation to a balance of curative and preventive medicine approaches in order to more effectively deal with an increasing number of small rural communities that are unfortunately outside the effective reach of the MOH rural health delivery system today. The MOH rural health delivery system today is semi-effectively providing curative services to urban populations at the sub-center level and at the health post. The lack of logistics at these levels effectively results in relatively few prospects for active curative or preventive/training interventions in the numerous small dispersed rural communities around the sub-centers or health posts urban areas.

This

This translates into significant augmentations of into the MOH provincial manpower at the Health Center level for health educators, sanitary inspectors and promoters: Each MOH Health Center needs a significant increase in logistics for the sanitary inspectors, health educators, and promoters to be able to effectively service the numerous sub-centers, health posts and numerous small rural communities with a balance of curative and preventive medicine approaches, training, health committee promotion and training, dissemination of a wide variety of integrated rural health delivery information and training materials and for much, much more effective of nutritional food supplement and pharmaceuticals to rural communities. Currently neither the sanitary inspectors, the health educators or the promoters have logistics support to be able to travel from the Health Center to the sub-centers, health posts or small rural dispersed communities. If they are really adventurous, they hitch-hike. Usually they just find something else to do in the canton where the Health Center is located. To make the rural health delivery system provide services to rural areas; someone is going to have to demonstrate the impact of providing logistics, adequate manpower and an improvement training program to widen the technical breadth of the personnel in the delivery system today.

Each MOH health center should receive an augmentation of at least 2 health educators, at least 5 sanitary inspectors and at least 7 four wheel vehicles. Each provincial health center should also receive a task and performance oriented training program to better train the personnel in a variety of action oriented inter-disciplinary curative and preventive medicine oriented information, techniques and procedures. With the large number of illiterate indigenous people in the rural areas, the training program should be complemented by an effective audio-visual capability (film projectors, films, non-formal education materials and a training program as to how to effectively use them. The development of 6 of these augmented health center resources in 3 provinces (Cotopaxi, Tungurahua, and Chimburazo) is envisioned as an initial demonstration project to demonstrate the efficacy of the approach and to show the widening effect in terms of actual services to the sub-center populations, the health post populations; and to many small rural communities that will for the first time be seeing and enjoying the impact of the rural health delivery system in terms of treatment, planning, training and promotion of community committees.

3. Presently as a result of a reorganization in IEOS in 1979, the IEOS has become very compartmentalized and bureaucratically complex. It is extremely difficult to get a true resources (manpower, logistics or funds) picture of what investments are actually occurring in the rural areas. IEOS for years has had a urban water supply and sewerage/construction of medical facilities orientation and although they are attempting to do significant works in the rural areas, they still have not made the switchover to rural perspectives in design, planning, choice of level of services or technologies used, or in their operation and maintenance approaches. IEOS as discussed earlier does not have a well defined and functional organizational unit focusing entirely on rural water supply and sanitation or hygiene education, training or promotion.

It presently has four major operational Divisions (Project Design, Construction Planning and Supervision, Operation and Maintenance, and Planning including Evaluation and Promotion) that each have a very small not well-defined staff availability for rural projects, but irregardless have complex component responsibility in rural project development.

This staff has extremely limited vehicles resources available to them for participation in field design of projects, supervision of construction, operation and maintenance and promotion. For example promoters typically have to hitch-hike to get to the rural communities or to provincial IEOS offices.

Typically the present organizational procedures take from 2 to 3 years for a project to progress from planning to implementation. During this period the project development document takes an unbelievably complex and tortorous course or route while bouncing around in IEOS. As a result few projects are being built especially in rural communities of 800 and below. As much as 80% of the very limited IEOS for construction and studies made available by the MOH are being used in more urban rural communities involving 2000-5000 people.

4. The directors and staff of the MOH and IEOS repeatedly expressed a concern for obtaining urban technical assistance and cooperation in learning to cope technically, socially and administratively with rural water supply and sanitation programs, with hygiene education and training programs so as to learn to do things simpler, more effectively and in a less costly manner. The IEOS staff realize from the sub-secretary down to the technology advisor that they are translating their many years of urban water supply and sewerage experiences into the rural communities. They realize that they are superimposing their rigorous urban design and construction approaches onto rural communities that do not have the need for or are not able to support the complex, sophisticated, and costly interventions being made in their communities. Associated with the above but slightly different is a desire on the part of MOH and IEOS staffs to more appropriately select, adapt, and utilize simpler and less costly technologies for their operational systems, i.e., devices or techniques that can be locally manufactured or implemented within Ecuador to avert foreign exchange requirements, to provide for lower unit costs of the devices, to provide for local national employment generation, to provide for national and timely availability of spare parts and devices, and to generally increase the capability and pride of the Ecuadorians in being able to support their large national water supply and sanitation program operational requirements with quality materials and devices made in Ecuador.

USAID/Ecuador should, could and can have a dramatic impact on the provision of technology transfer technical assistance in stimulating the interest in and stimulating the local manufacture of a large number of low cost, low maintenance devices for their national programs. DS/HEA stands ready to support the mission conceptually, informationally, and from an operational standpoint (to a certain extent) in the introduction of appropriate technology into the country. Examples of low cost, low maintenance devices ready now for stimulation of local manufacture and field pilots are the following:

AID Handpump; new types of faucets (Robovalves); new types of water meters (Robometers); new types of well screen or infiltration gallery screen (Roboscreens); low cost water seal latrines; simple well drilling equipment for very small drilling companies; solar distillation units for individual and cluster family applications; home storage and disinfection units that provide safe water for a family of 7 for 5 years for 25 dollars regardless of the quality of the source water; simple and low cost, low operation and maintenance cold chain refrigerators for storing vaccines at sub-center health posts; simple water supply system disinfection devices.

5. The MOH and IEOS staffs repeatedly have identified a lack of logistics transport as being a primary bottleneck in accelerating work in the rugged and time consuming (transport wide) rural areas of Ecuador. Too many staffers talked to indicated that rather than attempting a 2 or 3 day hitch-hiking visit to get to a rural community to work, they elect to find something else to do, i.e., the rural community need is not met because the staffers elect not to leave the well traveled and comfortable urban areas of the country. Another aspect of this problem appears to be an attitude problem on the part of the relatively highly trained engineers and health educators not feeling very comfortable with or enthusiastically wanting to work with the indigenous indian individuals or communities in the rural areas. By placing a socio-cultural anthropologist in the IEOS infrastructure and providing cultural training to the engineers and health educators or physicians in the MOH, the highly trained people should become more comfortable in working with the indians. They are really worlds apart. The USAID/Ecuador can do much to facilitate this apparent schism by periodically holding seminars or by providing contract hire socio-anthropologists to work with these groups and to help them analyze their problems and possibly assist in developing solutions.

6. As a result of the changes in Government in 1979 and the reorganization, many of the very experienced and knowledgeable IEOS and MOH planners, engineers, health educators, physicians, and promoters either resigned or were asked to leave their positions. They went into the private sector or the Universities. This resulted in an IEOS organization chart that looks pretty, but which has many open professional positions in key positions especially in the rural projects sections of various Divisions. Evidently several of the key-experienced MOH planners also left leaving somewhat of a problem in terms of the current planners knowing the details of what happened in the past and why.

7. IEOS rural water supply and sanitation sections are receiving typically in 1980 only 20 to 30% of the funds programmed by CONADE and the MOH for actual project design, construction supervision, operation and maintenance and promotion. This means that while IEOS was previously working to a very, very limited degree in the rural areas before, that now they are getting only a small fraction of what they were doing before. The problem is that many of the communities have saved up their 20% of the funds and are ready to get their water systems or latrines. Many of the provincial councils or municipalities have managed to save their 40% contribution for the small communities project; but IEOS does not have its 40% for contribution to the rural works. So the rural water and sanitation investment program essentially comes to a standstill. USAID/Ecuador can have a high impact on this situation by (1) encouraging the government to provide the 40% funding that the Government is allocating out to the Provincial Councils or Municipalities directly to the IEOS for implementation directly with the community in question, (2) improving the manpower, logistics and training of IEOS at the national level and provincial level so as to greatly increase the absorptive capacity of the organization in terms of its being able to do more and more of a higher quality, (3) by inter-donor discussions, encourage other donors to invest in the operational aspects of IEOS in the rural areas by providing construction, project design and operation and maintenance funds to stimulate coverage of the rural areas, (4) providing organization and management technical cooperation to encourage IEOS to develop a simpler organization more oriented to field services rather than to planning, sophisticated design and high technology. IEOS appears to have much too much up overhead or administrators for the size of its field operations.

8. As a result of the IEOS reorganization, the very limited staff resources have been compartmentalized to such an extent that few if any of the IEOS operational staff ever get a complete picture of the design, promotion, implementation, and operation and maintenance, community participation aspects of any of the rural projects. The reorganization has caused the operational staff to work in highly narrow technical areas and to become specialists, i.e., a project design specialist, a construction supervision specialist, and operation and maintenance specialist, a finances specialist or a promotion specialist. This orientation may be convenient to complex urban projects, but it is an unnecessary complexity and death-knoll to rural water supply and sanitation projects which will only cause confusion, red tape, turf battles and more importantly ~~will~~ keep the national level planning staff from completely understanding and developing a perception of the design, promotion and implementation of process for simple rural systems in rural communities. Rural projects require an integrated perspective be developed and nourished for the people that are having to plan, design, and implement, and effectively deal with the rural communities. The specialist approach to rural water supply and sanitation programs is ~~now~~ unnecessary, expensive, and doomed to failure because (1) the designers/implementers must have an excellent understanding of the fragile nature and resources base available in the rural community and (2) IEOS and the MOH could never possibly staff up to the point of providing specialists in the numbers necessary for substantial impact in the ~~next~~ 22,000 rural communities under 500 people in the country either from a skills or funding standpoint.

9. As a result of discussions and document review with IEOS and the MOH staff, there currently exists extremely limited funding (almost non-existent) or manpower resources for health education materials development, graphics, printing or dissemination and essentially non-existent capabilities in various audio-visual materials development and dissemination approaches. Various materials and approaches exist today and have been tried and used by many different donors since about 1963. The acting Minister of Health in discussions with the team, indicated that the MOH is intent and very interested in addressing more audio-visual education activities into the rural health delivery areas because "the literacy rate among the rural Indians in the rural communities is actually decreasing rather than increasing and even if they can not read, they can hear and see very well." Audio-visual presentations in the rural areas were said to hold high interest and enthusiasm by the rural people when given. The rural people will supposedly flock in from miles around if they know that a sound film is going to be shown in some village. This curiosity and rural community interest should provide the USAID and the MOH an excellent opportunity to get integrated audio-visual health education messages across if the audio-visual materials and devices are correctly chosen, developed for the rural target audience and available in sufficient numbers with trained promoters to accelerate activities. Messages could get to the rural poor (in Spanish, English, Quechua) on a wide variety of integrated rural health development topics. But the audio-visual system, and materials and trained promoters have to be available nationally and provincially. This type of technical assistance should be considerable interest to USAID/Ecuador as it basically involves funds, external technical assistance, internal Ecuadorian technical assistance, and curricula/~~materials~~ materials development and training. The techniques and devices or technologies are ~~now~~ available. Expert audio-visual expertise in health is available. Socio-cultural anthropologist expertise in assisting in the materials development is available. What is lacking ~~is~~ are the funds and the interest of the USAID in the particular intervention. The team believes that this is a relatively low cost intervention that should have tremendous informational, health impact, and public relations value to the Ministry of Health. The team is also convinced that they really do not know how to approach the problem from a management or technical standpoint.

10. Grant Funded Technical Assistance

The loan and grant aspects of environmental health and other integrated health delivery interventions into Ecuador are important to maintain in a balanced manner. It is not enough to put loan funds into "bricks and Mortar" or kkr to "strengthen infrastructure, manpower and logistics." The USAID also needs to sincerely contemplate and figure out how to provide the grant funded external technical assistance as an extremely important way of gracefully alerting the national technical professionals or planners as to new or simpler ways of bringing about services to the rural communities in less costly and time consuming ways. The team believes that in Ecuador's case as in most of the countries that AFD works with, "just doing more of the same" is not going to really solve the problem of establishing an effective health development system in the rural areas.

Considerable effort is needed for example for (1) stimulating the local manufacture of low cost, low maintenance water supply and sanitation health delivery devices and for (2) providing task and performance oriented training packages for a variety of health delivery workers in the rural delivery system.

Emphasis should be placed by the USAID at this time on the quality improvement aspects of the health delivery system or program and not just on the numbers of water systems completed, health sub-centers constructed and staffed, kx latrines installed or people trained. The mission can and should utilize significant amounts of grant funded technical assistance to greatly improve the efficiency, effectiveness, and quality of the interventions into the rural areas. This will result somewhat hopefully within the next 3 or 4 years as a result of the USAID's new Integrated Health Development Project. Hopefully a cadre of experienced, dedicated and effective workers will be spending greatly increased time in the small rural communities completing the rural health delivery system.

A significant U.S. grant funded element encompassing kx general technical assistance, technology transfer, training, curriculum development, training materials development and organizational/managerial/Operation and Maintenance consultation is required over the next 3 or 4 years. The team believes that without a healthy grant technical assistance component in the project, that the USAID will lack the flexibility of management required to effectively manage the project and at the same time take advantage of various targets of opportunity that develop and for which the mission will want to take advantage of, but which the mission may or may not have the operational P&S or direct hire travel/per diem funds to do so.

To complement this loan/grant agreement between the GOE and the USAID, the USAID is encouraged to use key pre-paid technical assistance resources of the Development Support Bureau. In DS/HEA operates a project entitled "Water and Sanitation for Health" (WASH) for the next 3 or 4 years which can be used to provide selective, specialized, short to medium term, expert technical assistance in the broad area of rural and urban-fringe water supply and sanitation. These technical assistance services are provided at no cost to the mission or the host country, but must be formally requested (scope of services required and timing) from the mission to DS/HEA. In addition to the area of environmental health, DS/HEA also operates a pre-paid technical assistance resource mntikikr entitled the "APHA-ADSS" project which can provide short term expert technical assistance in the areas of integrated health delivery services planning, design, trouble-shooting, evaluation, or specific technical areas. These services are also available to the mission and GOE at no expense if requested (scope and timing) through the mission to DS/HEA.

A discussion of DSE resources is made above to encourage the mission to utilize extensive Agency resources available outside of the

Latin America and Caribbean Bureau. These resources have been developed in cooperation with the IAC Bureau to facilitate support of operational USAID projects in the developing countries.

11. Strengthening and Complementing GOE Programs

All of the above interventions initiated above in cooperation with the GOE and more specifically with the MOH and the IEOS are being made to strengthen national and provincial organizations, management, logistical support and technical capabilities to better plan, design and implement rural water supplies, excreta disposal systems, hygiene education programs, operation and maintenance programs, ~~xxxxxxx~~ and training programs as part of a integrated rural development health delivery ~~xxxx~~ system to more effectively impact on substantially larger numbers of the poor in truly rural areas of Ecuador. The rural health delivery system in Ecuador is currently suffering from a lack of investment priority, from an insufficient technical manpower base, inflexible and insufficient logistics capability and from insufficient training in rural water supply and sanitation technologies and techniques appropriate to rural communities having very limited resources.

The above strategy directly supports and enforces the efforts of the GOE Integrated Rural Development (IRD) program by strengthening the MOH and the IEOS capability at the national and provincial levels to better provide substantive services within the IRD areas as well as to areas outside the IRDs. Our strategy of working with and strengthening the MOH capabilities in the provinces of Cotopaxi, Tungurahua and Chimburazo will further reinforce and strengthen planned GOE IRD subprojects at Salcedo (Cotopaxi), and at Penipe-Quimag (Chimburazo) and at the GOE/IBRD IRD project in Tungurahua.

The above strategy also merges with and strengthens the GOE/BID health sub-center and health posts project by providing IEOS with funds and training to more effectively design and implement rural water projects in communities within the ~~xxxx~~ GOE/BID areas for which the GOE/MOH/IEOS do not have sufficient funds to construct the water systems to satisfy the conditions precedent ~~in~~ allowing for construction and staffing of the subcenters and health posts. This investment strategy will result in 65-100 small rural communities in the 3 provinces that are in the sub-center/health post or smaller size communities getting water supply, latrines, and hygiene education as well as an effective logistical transfer capability set up for transport of O&M items, leche avena materials or nutritional personnel.

The above strategy primarily concentrates at providing augmented construction and studies funds, additional technical and supervisory personnel, logistical transportation and improved training techniques and materials in order to more effectively interact directly with the 400-800 small rural communities in each of the 3 specific demonstration provinces: The strategy will also provide an augmented national capability to work more effectively with thousands of small rural communities in the 17 other provinces. The small rural communities in our 3 province ~~can~~ demonstration will be strengthened by receiving safe water supplies, latrines, hygiene and nutritional education, training in O & M and more frequent logistical interaction with the MOH integrated rural health delivery system.

It is strongly believed that the catalytic investments at the national and provincial levels of the MOH and IEOS will result in methodologies and techniques that the MOH/IEOS can replicate in accelerating rural water supply and sanitation/hygiene education and training programs in many of the other rural oriented provinces. The team firmly believes that the infrastructure developed and the improved cost effectiveness of the MOH/IEOS organizations will draw other international organizations into Ecuador for investments in the MOH/IEOS delivery system because of the large ~~a~~ number of well designed and coordinated shelf projects which they ought to be able

to develop during the next 3 to 4 years.

The above strategy would be very remiss if it did not also include an immediate and very important effort by USAID/Ecuador to improve professional technical and managerial personnel in the MOH/IEOS organization with a mission sponsored participant training program (Masters Level) in the following subject areas:

- A. Four Civil/Environmental Health Engineering Masters Degrees (18 month programs) with special orientation to rural water supply and sanitation planning, design, construction, O&M, promotion and simple technologies. Special emphasis in public health aspects of environmental health. One person would return to IEOS national level rural projects División and one each would return to the Provincial rural activities in each of our 3 demonstration provinces.
- B. Two Nutritional Science Masters Degrees (18 month program) with special emphasis and orientation to developing world nutritional programs, to logistical support alternatives, to nutritional promotion and competency based training programs and tonutritional aspects of health education programs. Both Nutritional Scientists will return to work in the 3 provincial demonstration programs to improve content of existing health educator and promoter programs.
- C. Four Health Education Masters Degrees (18 month programs) with special emphasis and orientation to existing developing country programs, needs, techniques and methodologies. Persons will study balanced integrated health education materials development and will become very competent in audio-visual techniques and methodologies applicable to Ecuador. Rank One person would return to MOH/Quito for development of national projects and one each would return to the Provincial rural activities in each of our 3 demonstration provinces to work with and supervise the other health educators working in the various health centers within the respective province.

This participant training aspect should be entered into very early ~~inxxxx~~ in the USAID program and possibly paid for and initiated in the Summer of 1980 before the Project Paper team is even fielded. This could possibly be funded from reprogramming some of the PD&S funds and/or reprogramming some of the OPG funds being programmed for CARE or other PVO's. The mission can be assured that DS/HEA will seriously attempt to support the mission in finding or designing just the right curriculum to meet the individuals, the GOE add the missions needs.

MOH PROVINCIAL LEVEL AUGMENTATION
for Provincial (3) Rural Projects Activities

AUGMENTED MANPOWER in each of 6 Health Centers spread between the Provinces of Cotopaxi, Tungurahua, and Chimburazo.

5 Sanitary Inspectors

2 Health Educators (both to be trained in audio-visual techniques)

7 Total Rural Projects Personnel per Health Center in each of 3 provinces above

(2) Promoters---Possibly will be needed-to be looked at in PP.

AUGMENTED LOGISTICS (VEHICLES) located at Health Center for use in the rural areas around the Health Center

7 Four wheel vehicles per health center

AUGMENTED TRAINING MATERIALS EQUIPMENT AND AUDIO-VISUAL EQUIPMENT
for working in the rural areas around the Health Center

IEOS NATIONAL LEVEL AUGMENTATION
for Rural Water Supply and Sanitation Division

AUGMENTED MANPOWER for working in 20 provinces in rural areas

- 1 Rural Projects Division Chief
- 1 Deputy Chief (Operations and planning)
- 8 Civil/Sanitary Engineers
- 2 Geo-hydrologists
- 3 Projects Draftsmen
- 5 Health Educators
- 7 Promoters
- 1 Socio-Cultural Anthropologist
- 1 Audio-Visual Materials Specialist
- 2 Audio-Visual Graphics and materials Specialist
- 31 Total Division Personnel

AUGMENTED LOGISTICS (VEHICLES) for working in 20 provinces in rural areas

- 14 four wheel vehicles

AUGMENTED TRAINING MATERIALS EQUIPMENT AND AUDIO-VISUAL EQUIPMENT
for working in 20 provinces in rural areas

AUGMENTED PROJECT PLANNING AND STUDIES FUND
for working in 17 provinces in rural areas

IEOS PROVINCIAL LEVEL AUGMENTATION
for Provincial Rural Projects Activities

AUGMENTED MANPOWER in each of Cotopaxi, Tungurahua, and Chimburazo Provinces for work in the rural areas.

5 Civil/Sanitary Engineers
1 Geo-Hydrologist
5 Health Educators
1 Socio-Cultural Anthropologist
9 Promoters (1 is an audio-visual trainer)
1 Promoter/Anthropologist
22 Total Rural Projects Personnel

AUGMENTED LOGISTICS (VEHICLES) in each of the 3 above provinces

13 four wheel vehicles
3 one ton, long bed, crew cab, 4 wheel trucks
8 175cc motorcycles

AUGMENTED TRAINING MATERIALS EQUIPMENT AND AUDIO-VISUAL EQUIPMENT
for working in each of the 3 above provinces

AUGMENTED PROJECT CONSTRUCTION AND STUDIES FUND (WATER SYSTEMS)
for working in the 3 above provinces over 4 years

AUGMENTED LATRINE (WATER SEAL) CONSTRUCTION AND DISSEMINATION FUND
for working in the 3 above provinces over 4 years in the
construction of 15,000 total latrines

AUGMENTED ENGINEERING DESIGN GRAPHICS MATERIALS AND TRAINING FUND
FOR designing projects in the provinces (3) over 4 years

AUGMENTED PROVINCIAL OPERATION AND MAINTENANCE AND SPARE PARTS FUND
for MOH/IEOS augmented vehicles working in the 3 above provinces

FINANCIAL PLAN

MOH/IEOS/ AID LOAN-GRANT
 Integrated Health Development Project
 (4 year project)

A. MOH/IEOS COOPERATIVE FUNDING UNDER LOAN

- | | |
|--|-------------|
| 1. IEOS-national level funding for increased manpower for Rural Water Supply and Sanitation Division for 4 years | \$1,198,220 |
| 2. IEOS-provincial level funding for increased manpower for 3 provinces for provincial level rural water supply and sanitation activity | \$ 458,664 |
| 3. MOH-provincial level funding for increased manpower for 3 provinces (6 Health Centers) for augmenting sanitary inspectors and health educator and/or promoter personnel | \$ 906,648 |

MOH/IEOS loan contribution over 4 year project period = \$2,563,532

MOH contribution to loan is \$ 39.1% of the total loan or 36.4% of the total loan plus grant.

FINANCIAL PLAN
MOH/IEOS/AID LOAN-GRANT

Integrated Health Development Project
(4 year project)

B. A.I.D. COOPERATIVE FUNDING UNDER LOAN	
1. IEOS national level logistics (14 vehicles) in support of item A.1. under MOH funding.	\$ 140,000
2. IEOS provincial level logistics (13 pick-ups, 3 one ton pick-up trucks and 8 motorcycles in each of 3 provinces) in support of item A.2. under MOH funding.	\$ 561,000
3. MOH provincial level logistics (42 vehicles) in support of item A.3. under MOH funding for Health Center personnel in 3 provinces; to provide services to sub-centers, health posts, and very small communities not receiving services currently.	\$ 420,000
4. IEOS Rural Water Supply and Sanitation Div. national level audio-visual equipment and training materials strengthening.	\$ 60,000
5. IEOS provincial (3) level audio-visual equipment and training materials strengthening	\$ 60,000
6. MOH Health Center (6) level training materials development, task and performance orientated training and audio-visual development capability in 3 provinces.	\$ 60,000
7. IEOS provincial (3) level engineering design graphics materials for 4 years	\$ 29,000
8. Operation and Maintenance and spare parts fund for MOH/IEOS vehicles paid for under this loan for 4 years.	\$ 270,000
9. IEOS provincial construction and studies funds for about 100 water systems in 3 provinces over 4 years	\$1,800,000
10. IEOS national level studies fund for projects for other 17 provinces for national Rural Water Supply and Sanitation Division	\$ 200,000
11. IEOS provincial level water seal latrine fund for construction, dissemination and installation of 15,000 water seal latrines in the 3 provinces over 4 years.	\$ 400,000
A.I.D. Loan contribution over 4 year project period	\$4,000,000