

## LESSONS LEARNED

### ECUADOR FLOODS, FY 1983

The lessons learned from the 1983 Ecuador floods disaster relief operation were developed through interviews conducted between April 4-22, 1983 in Washington, Guayaquil, and Quito (individuals interviewed are listed in Appendix A). The lessons are arranged by topical area and are preceded by a description of the activity (e.g., deployment of water purification units, Guasmo drainage project) from which the lessons were derived. While an effort has been made to represent various points of view on a given subject, a certain objectivity must prevail if the lessons are to be generally applicable to other disaster situations. In addition, a number of the lessons are closer to recommendations, which if implemented, might help future disaster relief operations run more smoothly.

Prepared by Cecily L. Mango  
Evaluation Technologies Inc.  
April 1983

## ASSESSMENT

Activity - Overflight surveys of most of the coastal provinces were conducted to identify the locations and to assess the extent of the flooding. Babahoyo and environs and the Guasmo section of Guayaquil were identified as having the most serious problems. A rural assessment survey was conducted in over 30 villages in four provinces (see Appendix B for sample rural assessment form).

### Lessons Learned

An aerial or ground survey is the most effective method of determining whether or not a disaster exists in a particular location. Assessment surveys should be systematized. A simple form encompassing all affected sectors (shelter, transportation, food, health, agriculture, etc.) should be developed and the same form should be used each time a repeat survey is conducted. Assessment surveys should be conducted by the same trained individual(s) so the relative amount of damage can be established, as well as trends toward improvement or deterioration.

Field assessment surveys can provide an accurate appraisal of the disaster areas, identify needs, and establish levels of need. As such, field surveys act as a defense tactic to challenge or cope with exaggerated reports by the press or politicians of damage and human suffering. Survey results may allow the Mission to resist host country pressures for costly and possibly unneeded imported solutions. In most cases of flooding, the disaster situation is not as bad as reported by politicians, the press, and PVOs. For example, the rural survey established, despite reports to the contrary, that food was not a pressing need (PVOs were providing a variety of commodities in sufficient quantities). In addition, the survey revealed that local infrastructure (trained personnel, warehouse facilities, transport, etc.) was not available or sufficiently developed to provide the management support needed for effective food storage and distribution.

Video equipment can be an important adjunct to written and oral reports when conducting rural surveys. Because many affected areas may only be accessible by traveling long distances by vehicle, canoe, pack animal, or by foot, video allows Mission staff in the capital to see the real conditions in these places. Once decision-makers in the Mission and host country see the actual extent of the disaster, they are less likely to be influenced by exaggerated claims of destruction or suffering. (See also Management Issues for other uses and benefits of video.)

Peace Corps Volunteers may be most effective in conducting assessment surveys. Volunteers should have one to two years of in-country experience, have good language capability, and know the areas to be surveyed. Large numbers of Peace Corps Volunteers should not be used in disaster situations because there is generally no one available to oversee their activities. Ironically, and despite having hosted an

A.I.D./Peace Corps Conference on disaster relief and preparedness, the Mission did not initially consider the use of PCVs following the disaster.

A civilian DAST-type assessment team should be permanently established to respond immediately when a disaster situation appears imminent. The team should be composed of several generalists, and augmented by a roster of technical specialists. Dedicated logistics support (twin-engine plane, vehicle, etc.) is necessary; host country transportation may not always be available, particularly if the disaster has affected several areas of the country.

An accurate technical assessment is necessary before decisions are made to send relief supplies or deploy specialized equipment (e.g., water purification units). The type of equipment and number of support personnel should be established prior to requesting or sending the equipment. This is also true when responding to host country requests for other types of assistance; otherwise time, money, and resources are wasted. For example, in response to a GOE request, two A.I.D. engineers were sent to survey three damaged bridges and make recommendations regarding their repair or reconstruction. However, while providing this technical assistance, the Ambassador made it clear that the USG was not going to become involved in providing bailey bridges. This candor precluded countless GOE requests to Mission and A.I.D. staff for bridge building materials .

Urban disasters should not be accorded less interest or attention than those in rural areas. Disasters in large or medium sized cities are not only compounded by large concentrations of people, many of whom may be very poor, but also by inadequate public services such as sewerage systems and crowded, unsafe housing which may actually aggravate the disaster situation. This was particularly true of the Guasmo, which went almost unnoticed at the early stages of the flooding in Ecuador.

## WATER PURIFICATION UNITS/WASH TEAM

Activity - Six OFDA water purification units with necessary auxillary equipment were sent to Guayaquil and deployed initially at Babahoyo and subsequently at Baba. A WASH Team was sent to set up the units and train Ecuadoreans in their operation and maintenance.

### Lessons Learned

OFDA needed to have a better technical understanding of the water purification units and which type of situations warrant their deployment in order to properly advise the Missions. For example, because Mission staff did not know the useful life of the units, the Ecuadoreans were given the impression that the units could be used as permanent water purifiers. Moreover, no information was available to guide the Mission in determining the relative merits of deploying the purification units as opposed to restoring the city's regular water supply. A standard cable on the purification units is needed which can be sent to Missions when deployment is being contemplated. Issues to be addressed include: a description of the units; pre-requisites of deployment (e.g., size of target population, source of contaminated water); deployment time; total cost per unit deployed, including transportation; necessary technical support; quality control; and accountability.

OFDA should arrange for a technical briefing on the water units as part of its overall staff training program. Many specific lessons were learned regarding the units' operation, and design modifications are being made as a result of the experience in Babahoyo. Translated literature on the units should also be available for the recipient host country agency. This literature should be general and non-technical in nature and serve as an adjunct to the more detailed operating manual.

Once it is decided that water purification units are required, OFDA should make arrangements for WASH Team assistance through AID/S&T/H. If OFDA contacts WASH contractors directly, OFDA is assuming the responsibility for making informed technical decisions. Currently, OFDA does not have an engineer or similar technical advisor on its staff to discuss technical matters and answer contractors' questions. Additionally, under the prevailing WASH contract, official task orders must come from S&T/H. OFDA, S&T/H, and WASH should also decide prior to deployment of a purification unit which office in AID/W and which individual(s) in-country is in charge. There is a need to clarify whether the WASH contract stipulates that team members must report to a USG direct-hire rather than another contractor, even if that contractor has been given coordinating authority by the Ambassador.

OFDA, S&T/H, and WASH should discuss and agree on the minimum number of technical assistance personnel necessary to set up the water purification units and train local operators. The number of technical advisors sent to Ecuador was probably too high, particularly since the U.S. Ambassador did not want many Americans on the scene. Further, the large number of technicians created confusion and misunderstanding among the technical advisors, Mission personnel, and AID/W. In any

case, communication between the field and AID/W should be through official channels (disaster coordinator to OFDA), not via technical advisors and their home office. OFDA, S&T/H, and WASH should also discuss the level of technical assistance required to successfully set up and operate units: are engineers necessary or are mechanics/technicians sufficient?

The situation in Babahoyo may not have warranted the cost of sending the water purification units by charter rather than by cargo aircraft. The time difference would have been approximately 24 hours while the cost of using a charter was at least ten times that of a cargo plane. The cost-benefit ratio is important when deciding which transportation method to employ. Such decisions, however, are more easily judged after the fact than during the early stages of the disaster.

There are two main types of water problems: production and distribution. If the problem is distribution, only the 3,000 gallon water tanks are needed. The water tanks can convert any truck into a tank truck. For individual or family distribution, the tanks can and should be fitted with many small distribution hoses. More sealing tape kits should be sent with the tanks -- after much use and exposure to heat and sun, tank seams loosen causing leaks. OFDA should consider maintaining a large stock of these tanks.

Where feasible, a strict limit should be established with the host government on the length of time the water purification units will be deployed. The units tend to create a disincentive for the community to restore its regular water supply. Local people assume their problem has been solved by the unit rather than realizing that it is only a temporary relief measure and that the units are only on loan. An inventory receipt of all equipment with serial numbers should be prepared and a copy given to the local responsible authority when the water purification units are delivered. The local group should sign for the equipment and acknowledge their responsibility to protect the units and to return all the equipment in undamaged condition by the pre-established termination date.

The selection of the host country agency to manage the units should be made carefully. It is very important that the units do not become a pawn in the hands of local politicians or competing local agencies. In Babahoyo, the various government agencies each wanted the units to be set up in front of their local office and wanted their personnel in charge. Responsible agency personnel as well as U.S. technicians must be willing to work round-the-clock, seven days a week.

Training of local technicians should be accomplished in the shortest time possible. A U.S. water technician/mechanic is only necessary for 2-3 weeks and then should be on-call in case problems arise. Generally, once the purification units are set up, only one technician is needed. However, in the event that several units may have to be moved

to a new water source, a WASH technical advisor may be required to evaluate the water source and the quality of the purified water.

The Spanish translation of the water purification unit operating manual was not completely accurate. If OFDA intends to have host country personnel operate the units, translated versions of the manual should be prepared (at least in Spanish and French) prior to deployment. During the disaster is not the time to be translating a manual.

Once the purification units are installed, the national or local hygiene department should check water quality at least twice a week. In addition to being advisable from a health standpoint, such checks make good political sense and provide positive publicity.

The use of a priest to bless the water purification operation showed good cultural sensitivity and enhanced the legitimacy of the operation in the eyes of the local community members, many of whom may have been somewhat skeptical of the unit's ability to purify contaminated water.

Initially, utilization of the water units was lower than expected. The cause for this turned out to be twofold: first, a rumor that people had to pay for the water was circulating in Babahoyo; second, the high water level made it difficult for potential users to travel to fetch the water. The rumor was put to rest through radio messages indicating that the water was indeed free. As for the second problem, when the flood level gradually receded people were able to move around more easily and the demand for the water actually increased. Thus, receding water levels may imply a greater demand for water, not less.

In conjunction with providing the water units, an assessment was also conducted of the Babahoyo water and sewerage systems. Results indicated that much of the flooding was not caused by the river overflowing its banks but rather by negative water pressure which was causing river water to be pumped into the town through the sewerage system. A very low cost solution of installing check valves on the system's outfall points was identified and explained to personnel at the national water authority. Although A.I.D. offered to pay for this work, to date no action has been taken.

## THE GUASMO: AN URBAN DRAINAGE PROJECT

Activity - Management support and OFDA funds were provided to the Government of Ecuador for the digging of primary and secondary drainage canals in the Guasmo section of Guayaquil which was inundated by flood water. Ten kilometers of canal were dug by the GOE Corps of Engineers allowing accumulated standing water to drain out of residential areas permanently .

A limited number of tertiary canals were dug by residents with oversight responsibility provided by the voluntary agency Foster Parents (Plan de Padrino).

### Lessons Learned

It was important to focus on the solution (the need to get the water permanently drained out of the Guasmo) rather than the problem (standing water which creates difficult living conditions and increases health risks). Sending in food or medicine would have treated the symptoms but not cured the problem.

The Guasmo drainage project solved the emergency (the incidence of disease declined; a burden was taken off the GOE because the problem could not recur during the same rainy season; political tensions resulting from the poor living conditions were reduced) as well as provided a lasting improvement to the community (positive long-term effect on the health of residents; drainage culverts can be utilized if a sewerage system is ever installed; an increase in property values along the drainage canals).

Block grants should not be given to PVOs or local authorities for relief projects. In the case of the Guasmo drainage project, it was better to channel the funds through the disaster coordinator so that such funds could be dispersed in accordance with progress made. To have announced at the outset that \$200,000 was being provided to the GOE would have made it more difficult for the U.S. Ambassador to promote an open ended agreement that the USG and the GOE would share 50-50 the costs of draining the Guasmo.

It is possible to get money to fund relief projects from sources other than OFDA (Norwegian Church Aid offered to contribute US\$50,000 to the Guasmo project). In the future, OFDA might want to consider a more ecumenical approach to funding relief projects in the field. Other organizations, while not having OFDA's operational ability to manage projects, are willing to commit funds to a well-planned project.

Digging tertiary canals through volunteer community labor proved to be an impractical strategy. Most Guasmo residents have at least one job, and were only willing to volunteer on weekends. To be successful, such a project requires a seven day a week effort. Given constraints of time and management and technical support, contracting for paid labor would have been a preferable alternative. In general, labor-intensive projects may not be practical when speed is a major concern.

## MANAGEMENT ISSUES

Activities - Overall management of the Ecuador flood relief operation to include: coordination, communications, roles and responsibilities, technical and political aspects, publicity, and financial considerations.

### Lessons Learned

The tasks of development and disaster work are totally different. By definition, development programs evolve over a long period of time; disasters are normally sporadic events requiring quick action. USAID Mission staff, whose primary responsibility is the implementation of development projects, have neither the time nor the expertise to deal with moderate to large scale disasters. It is generally unrealistic to expect the MDRO, who is often a low ranking officer, to handle disaster work in his spare time. If OFDA is to provide effective and professional relief assistance, a disaster specialist (either an OFDA Operations Officer, or an independent consultant, or both) must be sent to assist the Mission, preferably as soon as a potential disaster is recognized. Furthermore, the Mission and the Embassy look to OFDA for specialized assistance, particularly disaster management support. On the other hand, Mission staff can and should serve as the local resource for logistical and administrative support. The Mission/Embassy staff are also in a position to handle and advise on political matters, thus freeing the disaster specialist(s) to proceed with relief activities unfettered by day to day political or media pressures.

OFDA needs to develop a larger cadre of well trained disaster field workers. This could be accomplished through a disaster training internship program (perhaps with Peace Corps) sponsored by OFDA. Once trained, these individuals, along with OFDA staff, would provide Missions with the specialized management resources needed during a disaster. Technical resources can usually be found in-country and implementation of relief projects can also, for the most part, be carried out by host country nationals. The problem with training Mission staff and host country nationals to be disaster management experts is similar. Because disasters occur infrequently in most countries, it is often considered a waste of valuable resources to assign a talented and enthusiastic individual to disaster work full-time. A disaster professional, on the other hand, can be sent from one disaster to the next as a full-time job.

There is a need to identify disaster situations and mobilize resources as early as possible. When a disaster is in the process of developing, it is worth sending a disaster specialist (or team) to the country for 2-3 days to assess the situation and advise the Mission. OFDA needs to focus more fully on its emergency preventative role. If possible, the time for OFDA intervention is while the disaster is developing. This is also a good time to provide advice and counsel to the Mission staff because by then they know they will have to respond. Acting earlier also provides the Mission staff with a frame of reference. Once people have seen the situation in a pre-emergency stage, they can more easily gauge the magnitude of the actual disaster if and as it develops.

Video can be used effectively as a management tool to reduce the number of visits to the disaster area, thus saving time and money. Tapes can then be shown to Mission and host country personnel who need the information, and for general briefings. Video tapes also help eliminate most differences of opinion as to the magnitude of the disaster or, in the case of the Guasmo project, video tapes can be used to monitor the progress of work.

Video tapes communicate a disaster and/or relief project and its problems more quickly and effectively than a briefing or written report. Field tapes may be sent to Washington and to other interested parties for viewing and may be provided to local media networks for publicity material (e.g., Ambassador's visit to the Guasmo). Tapes may be reused when no longer needed or kept as a permanent pictorial record of the disaster. Video tape could also be used to brief members of Congress and their staff.

Video equipment should be lightweight and have a battery charger and rechargeable battery packs. OFDA tape units should be compatible with those used by the Missions. Sony equipment would give the best assurance of getting emergency spare parts and repairs locally.

OFDA should maintain a small stock of handheld, rechargeable SSB radios for field work. SSB radios make field work more efficient and provide security for workers in remote locations. The radios have a range of 2,000+ miles over rough terrain.

Sending an OFDA representative to Ecuador who was able to analyze options, set an appropriate plan of action, identify needed management resources, and assure compatibility with the Mission's programs and policies proved invaluable. Without OFDA management support (OFDA TDY and disaster team) the Mission/Embassy would have had little idea what types of relief assistance could be provided. A list of commodities maintained at OFDA stockpiles and examples of assistance provided in other disasters would help in identifying possible relief options.

Short case studies of recent local or similar-type disasters would be useful as a training tool. Such studies could be distributed easily and serve as briefing materials for the MDRO and other Mission personnel as well as host country officials.

Generally, large coordinating meetings between Mission personnel and local government officials do not accomplish much. Small working level meetings on specific problems are much more productive. For example, a conversation between the Ambassador and a general in the Ecuadorean defense forces resulted in securing the Ecuadorean Corps of Engineers as the work element for the Guasmo project.

To avoid making inappropriate or unnecessary offers of assistance, all requests/offers should go through the designated disaster coordinator. Mission/Embassy personnel should not promise any type of assistance to their host country counterparts. For example, assistance in the form of milk powder, seeds, and bailey bridges (all offered by USG personnel at the initial stages of the disaster) was not warranted based on disaster assessment results. Moreover, the OFDA officer was then re-

quired to explain to GOE officials why OFDA could not comply with these requests. . These offers it should be noted, were made despite a Mission-wide staff meeting in which the OFDA representative and the Ambassador both discussed the problems associated with making such offers to GOE officials. It was stressed that relief assistance paid for by OFDA funds has, by law, certain constraints (e.g., it must focus on immediate life-threatening situations and rehabilitation projects, not reconstruction) and that it is also limited in overall amounts.

Financial considerations are important when choosing the type and amount of assistance provided; a cost-benefit analysis should play a role in the decision-making process. OFDA Operations Officers as well as personnel in the field should know what is being spent for relief assistance. Each 15 or 30 days (depending on magnitude of disaster), OFDA should send the Mission a rough estimate of all funds disbursed to date for the disaster operation. The level of USG monetary effort should be known by Mission/disaster team and can be extremely useful for publicity and for political interests.

Detailed situation reports from the field should be sent to AID/W on a regular basis. In order to properly document the course of a disaster operation, cables should follow up telephone conversations.

Ecuador has no local disaster organization other than the Civil Defense. Because the disaster crossed provincial boundaries, the Ecuadoreans had difficulty deciding which among several local authorities would be in charge of the water purification units. This situation complicated the job of US advisors who were trying to work with the local authorities. USG effectiveness is, to a large extent, determined by the effectiveness of the host country counterpart.

In the initial stages of developing a relief project such as the Guasmo drainage project, it is not advisable to publicize the dollar amount committed by the USG. The knowledge of this information by local project workers and politicians will only increase the chances for waste, fraud, or under-commitment of resources by the host government. Publicity should also be kept to a minimum until it is clear that the project will be successful. If expectations are raised and cannot be fulfilled, the result will be anger and resentment towards the USG.

Other than providing instruction on how to declare a disaster and authorize the \$25,000, the Mission Disaster Plan was not used (many Mission staff had never seen the Plan). Decisions faced by Mission personnel during a disaster and particularly detailed information on specific subjects, for example, bailey bridges or local sources of culverts, are not covered by the Plan. No plan, regardless of how comprehensive it may be, can anticipate every contingency which might arise during a disaster. It is probably unrealistic to expect Mission Disaster Plans to provide more than very general guidance.

While the disaster coordinator is usually the Chief of Mission or the MDRO, this is not always practical nor is it possible to foresee who in a crisis situation is going to emerge as the leader. Once a disaster coordinator is chosen (or has emerged), activity should be centralized and all actions cleared through this individual. In cases where the disaster coordinating center is physically removed from the Mission, all cable traffic concerning the disaster operation should be "info'd" to the center -- in this case the Consulate in Guayaquil.

USAID Missions should be aware of vulnerabilities and resources outside the capital region. They can be helped in this by developing closer ties with regional consulates or regional A.I.D. or Peace Corps offices where such exist.

The disaster coordinator should maintain control and only provide assistance when and where there is a demonstrated need. The difference between effective aid and public relations should be kept clearly in sight. During the Ecuador flood relief operation, the USG was able to resist the normal emergency reaction of sending in large quantities of food, medicine, and clothing, and was instead able to develop relief projects with clear, well defined goals. It is often preferable that U.S. aid be self-contained, i.e., that it doesn't place additional burdens on already strained host country resources.

Just because the situation seems to improve does not mean the disaster is over; this is particularly true of disasters caused by unstable weather conditions. Although there is a tendency to want to wind down an emergency operation as soon as possible, premature withdrawal could result in unfortunate or embarrassing consequences. The USG should not be too quick to congratulate itself on a successful operation until sufficient time has passed to assure that the disaster is demonstrably over.

Immediately after a disaster is the best time for the A.I.D. Mission (and host country) to capitalize on heightened awareness and interest by starting long-term disaster mitigation projects, evaluating the efforts of all parties during the disaster, and developing lessons learned for the future.

APPENDIX A

Jay Anderson - Food Officer, USAID/Quito  
Dave Donaldson - WASH Team Engineer  
Dr. Ken Farr - Health Officer, USAID/Quito  
Sherry Fielding - Peace Corps Volunteer, OFDA Contractor  
Paul Fritz - Acting Mission Director, USAID/Quito  
Bob Gersony - Disaster Coordinator, OFDA Contractor  
Greg Goewey - Hydraulic Engineer, USAID/Quito  
Charles Grover - Consul General, Guayaquil  
Ray Lynch - OFDA Contractor  
Rod MacDonald - Chief Engineer, AID/LAC  
Darrell McIntyre - Agriculture Officer, USAID/Quito  
Alan Reed - Assistant MDRO, USAID/Quito  
Ray Revis - Cummins-Wagner Technician  
Victor Wehman - WASH Project Manager, AID/S&T/H  
Harry Wilkinson - Assistant Director, OFDA  
John Youle - Deputy Chief of Mission, Quito

APPENDIX B

SAMPLE RURAL ASSESSMENT FORMS

Ecuador Floods: Field Surveys (Jackson/Fielding)

<u>Village/Area</u> <u>Province</u> <u>Survey Date</u>	<u>Population &amp;</u> <u>No. Families</u> <u>[Approximate]</u>	<u>Flooding</u>			<u>Shelter</u>			<u>Migration/Displacement</u>	
		<u>% Aground</u> <u>Flooded</u>	<u>% Village</u> <u>Flooded</u>	<u>Source of</u> <u>Flooding</u>	<u>No. Houses</u> <u>Destroyed/</u> <u>% of Total</u>	<u>No./% Houses</u> <u>Where Water</u> <u>Actually Entered</u>	<u>% Abandoned</u> <u>or Evacuated</u>	<u>% Village</u> <u>Population</u> <u>Which Aban-</u> <u>doned Area</u>	<u>% of Population</u> <u>Composed of</u> <u>Newly Arrived</u> <u>Immigrants</u>

---

---

Where Do Newly  
Arrived Reside

Have Newly  
Arrived  
Brought Food/  
Cash/Belongings

Water System

Sewewage/Drainage

Infrastructure/  
Transport

Agriculture

---

Food

Health

Development Groups  
Mentioned

Special Problems  
and Needs Raised  
by Victims Themselves

Other

---

---