PN-ABL-309

77270

AGENCY FOR INTERNATIONAL DEVELOPMENT
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ENTER INFORMATION ONLY IF NOT INCLUDED ON COVER OR TITLE PAGE OF DOCUMENT

1. Project/Subproject Number
9365948

2. Contract/Grant Number
DPE-5948-C-00-9030-00

3. Publication Date
May, 1992

4. Document Title/Translated Title
Assessment of Interagency Collaboration in the Benin Rural Water and Sanitation Project (680-0201) and Its Guinea Worm Reduction Component June 17 - July 6, 1991

5. Author(s)
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6. Contributing Organization(s)
Vector Biology and Control Project
Medical Service Corporation International

7. Pagination
169

8. Report Number
81152

9. Sponsoring A.I.D. Office
R&D/H

10. Abstract (optional - 250 word limit)

11. Subject Keywords (optional)
1.
2.
3.
4.
5.
6.

12. Supplementary Notes

13. Submitting Official
Robert W. Lennox, Sc.D.

14. Telephone Number
703-527-6500

15. Today's Date
5/22/92

DO NOT write below this line

16. DOCID

17. Document Disposition
DOCRD [ ] INV [ ] DUPLICATE [ ]

AID 590-7 (10/88)

PN-ABL-309

Vector Biology
and Control Project

Assessment of Interagency Collaboration in the Benin Rural Water and Sanitation Project (680-0201) and Its Guinea Worm Reduction Component

June 17 - July 6, 1991

by

Harvel Sebastian

James Collbran

and

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VBC Report No. 81152

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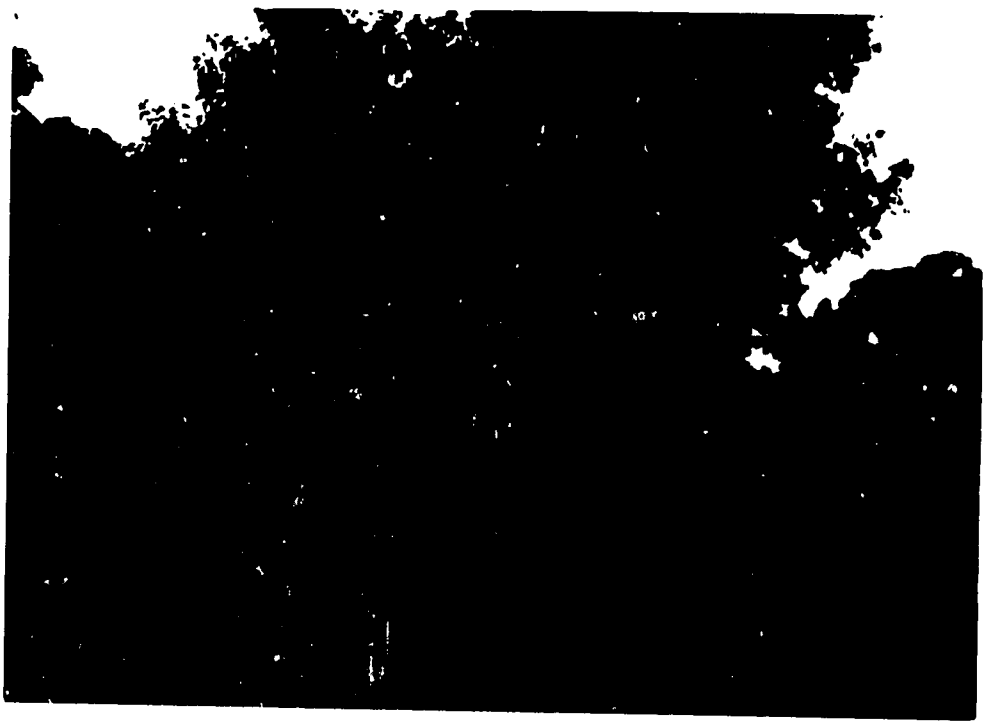
Acknowledgments

Preparation of this document was sponsored by the Vector Biology and Control Project under Contract #DPE-5948-C-00-9030-00 to Medical Service Corporation International, Arlington, Virginia, USA, for the Agency for International Development, Office of Health, Bureau for Research and Development. Services of the evaluation team were jointly provided by UNICEF (Mr. St. Lot), Peace Corps (Mr. Collbran), and VBC (Ms. Sebastian).

Team members would like to jointly and individually acknowledge their thanks to all Project members and beneficiaries who have received us well, answered our multiple questions, and given us the advantage of their knowledge and understanding. Special thanks go to Mr. Julien Dossou-Novo, National Coordinator for the Project and National Coordinator for the Guinea Worm Eradication Campaign, and to Mr. Jean Pierre Meert, UNICEF Chief of Project, for his generous help and unfailing logistical support. Mr. Charles Samake, UNICEF Country Representative, and Mr. Ngokwey, in charge of Program at UNICEF, offered kindness and support. Mr. Wentling, of USAID/Lomé, and Mr. Yellot made special efforts to meet with us. Finally, special thanks to Mrs. Laurin and all the Project team at Bohicon.



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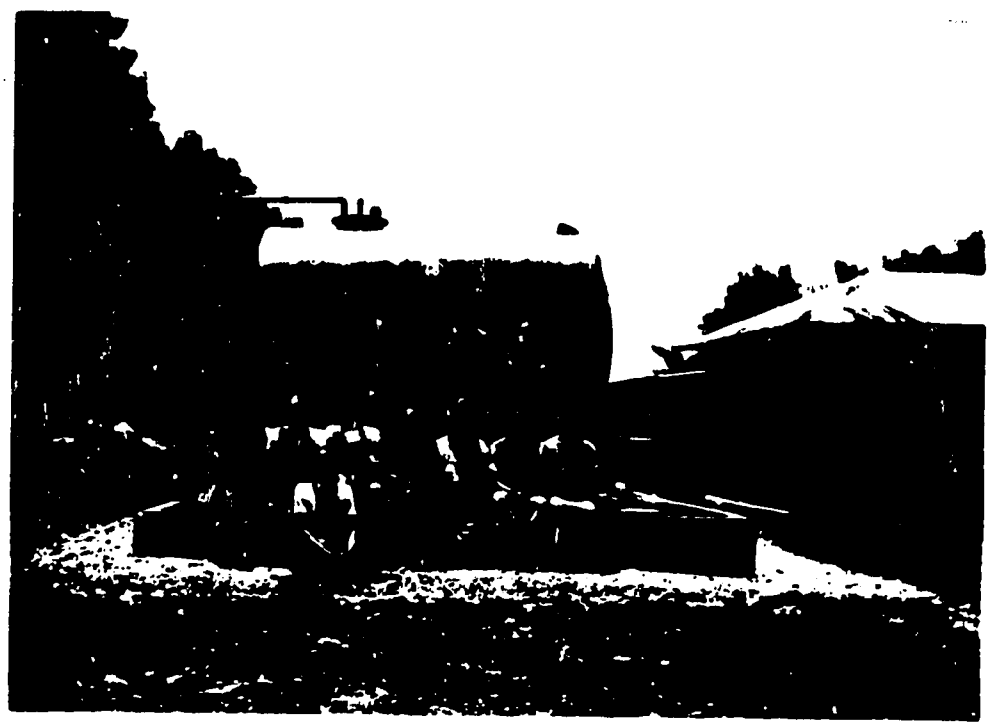

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Water Supply and Committee

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List of Acronyms

DAS	Directorate of Social Affairs
DEP	Directorate of Planning and Studies
DESFOC	Directorate of Health Education and Continuing Education
DGSA	Directorate of Sanitary Engineering and Sanitation
DH	Directorate of Hydraulics
DILABM	Directorate of Bio-Medical Analysis Laboratory
DPS	Provincial Health Directorate
DPTAS	Provincial Directorate for Labor and Social Affairs
DT	District Team
GRB	Government of the Republic of Benin
GRPB	Government of the Popular Republic of Benin
MAEC	Ministry of Foreign Affairs and Cooperation
MCDI	Medical Care Development International (Contractor)
MET	Ministry of Equipment and Transport
MIS	Management Information System
MISPAT	Ministry of Interior, Public Security, and Territorial Administration
MPS	Ministry of Planning and Statistics

MSP	Ministry of Public Health
MTAS	Ministry of Labor and Social Affairs
OCCGE	Organisation de Coordination et de Cooperation pour la lutte Contre les Grandes Endemies
PCV	Peace Corps Volunteer
PRAGMA	U.S.-based contractor
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VBC	Vector Biology and Control Project
WASH	Water and Sanitation for Health Project
VSHDC	Village Social Health Development Committee

1. Executive Summary

1.1 Project Achievements

The joint-agency Benin Rural Water and Sanitation Project has successfully provided northern Zou Province with 281 positive wells in villages that have received training for social mobilization, pump maintenance, and intensive health education. The Ministries of Health and Social Affairs have jointly established the capability for multidisciplinary planning, training, and outreach. The Ministry of Equipment's Directorate of Hydraulics now has capable teams trained in the technology of water-supply production, as well as the equipment to continue and maintain this activity. Further, the Project has led to the creation of a system for Guinea worm (GW) surveillance and elimination. This has been an effective and productive project; it has also been a complex project, involving four multifaceted institutions and providing a program with multiple elements.

1.2 Project History

The Project had a difficult beginning. Signed in 1980 for an authorized life of five years, the Rural Water Project was suspended in 1981 because of a strained bilateral relationship. It was revived in 1984-85 and redesigned to include health-education and sanitation elements. A 30-percent reduction in dracunculiasis (Guinea worm disease) was to serve as an indicator of successful achievement of the rural health-improvement goal.

UNICEF had worked with the Benin Government (GRB) in the water sector since 1980, installing 360 pumps by 1985. The congruence of country goals and the complementarily of proposed resources convinced USAID and UNICEF to attempt a Water and Sanitation Project jointly with agencies of the GRB. It was determined that Peace Corps volunteers could also play a role at the local and district levels. The 1985 revision of the Project was funded at $6,707,000. By Grant Agreement, USAID transferred

$2,092,000 of the total to UNICEF to ensure the water-supply production. The Peace Corps earmarked $285,000 to support volunteers.

1.3 The 1984-85 Plan

USAID and UNICEF signed their Cooperative Grant Agreement in March 1986. The planned Project components were:

1. Rural water supply, involving drilling and pump installation, construction of cisterns, and some alternative water-supply elements;

2. Rural health interventions, involving training of outreach agents and villagers in health education, sanitation, village mobilization and organization, pump maintenance and repair, and epidemiological survey; and

3. Sanitation, consisting of construction and maintenance of pit latrines and water-quality testing.

1.4 Donor Agency Roles

UNICEF was to be responsible for developing water resources, with the following activities: constructing boreholes; installing pumps; training GRB water-supply development technicians; mapping water quality;[1] training villagers and mechanics for pump maintenance (with assistance from the Project technical team and

[1]In the original plan this element was to be handled by CARDER of the Ministry of Development, with the USAID contractor supplying the testing kits. When neither CARDER nor the Directorate of Hydraulics could perform this task, UNICEF, with Peace Corps volunteers, provided the physico-chemical analysis. The GRB's DILABM handled bacteriological testing. The USAID contractor brought in a short-term consultant for quality control.

Peace Corps volunteers); establishing a spare-parts logistics system; and conducting a separate but complementary latrine construction and environmental sanitation effort.

The USAID contractor, PRAGMA, was to have overall responsibility for: project administration and management; community mobilization and health education; rain-catch cistern construction; latrine construction and sanitation; village organization for pump maintenance; an epidemiological surveillance plan and baseline study (with Peace Corps volunteers helping); and construction of Project headquarters.

Peace Corps was expected to provide volunteers to serve as health-education supervisors for community mobilization and health education and for data collection through epidemiological surveillance; and other volunteers to serve as pump-repair supervisors to provide training in pump repair and maintenance. (Later, in 1990, outside the framework of this Project but in the same region, Peace Corp volunteers were recruited to assist UNICEF in Guinea worm disease surveillance.)

1.5 Government Responsibilities

The national government would provide a policy and monitoring committee, drawn from the Ministries of Plan, Equipment, Social Affairs and Health. The lead ministry (Equipment) would provide a project coordinator.

At the provincial level, the GRB would provide a provincial coordinating committee composed of regional directors for Hydraulics, Health Education, and Social Affairs; technicians to form a multidisciplinary provincial training team for village mobilization and health education; and the water-production technical team from the Ministry of Equipment's Directorate of Hydraulics, including geology and engineering, drilling, garage, and logistics personnel.

At the district level, District chief medical officers (médecins chefs) would supervise the socio-health program in the villages, and district teams would be formed, each with two nurses, two sanitarians, and two social-worker *animateurs.*

1.6 Guinea Worm Reduction

As the description above shows, the Project was not originally designed to eradicate Guinea worm disease. The sweeping goal of health improvement aimed at diminishing all water-borne diseases, which in Benin are legion. Reducing Guinea worm incidence, which is easier to measure, would indicate the general success of the Project. But a growing awareness that dracunculiasis could be completely eliminated was focussing world medical attention, and the 1986 World Health Assembly resolved to make the effort. A.I.D. responded to 1987 congressional interest with a plan to add GW control components to ongoing water projects in endemic areas, and a 1988 WASH Project manual outlined control components.

The Benin Water and Sanitation Project's first geographic survey conducted to locate target villages pointed out the overwhelming incidence of Guinea worm disease in the zone, and provided a modest base for subsequent epidemiological surveys. Unfortunately, a planned baseline health study fell victim to early Project delays. Nevertheless, in subsequent years, annual two-stage cross-section surveys were made in the two peak periods when the disease becomes apparent (December and April). Interest generated by the Project led the GRB to hold a National Guinea Worm Eradication Conference, make a National Guinea Worm Survey, and develop a National GW Eradication Plan with UNICEF support.

A spin-off from the Project has been the development of a rudimentary epidemiological surveillance system that, though seriously weakened by the lack of baseline data and requiring more stringently scientific design, still provides a foundation on which to build. It will be important to correlate and assimilate this system with the Ministry of Health's health information system (HIS), which is also rudimentary; this has not yet been done.

1.7 Key Implementation Constraints

Four major constraints have affected this Project:

1. There was a lack of sufficient design specificity in the Project's planning phase; too much was left vague in the Project documents, and detailed planning got lost in the delays that followed. But multi-agency projects require a high level of design specificity to counter the differences in institutional modes.

2. From the beginning of their collaboration in 1986, UNICEF and USAID personnel held very different perceptions of the nature of the Project, and of the roles and relationships among the participants. For USAID this was an A.I.D./GRB project, in which water-supply production was subcontracted to UNICEF. The USAID contractor would manage the Project in collaboration with the GRB-designated national coordinator. For UNICEF, this was a "noted Project" for which it had sought funding to complete one more phase in the UNICEF Program in the Benin water sector. Because of these divergent perceptions, the Project encountered difficulties in management and coordination: specifically, a competitive, bilineal set of decision-making efforts instead of one unified chain of command. This might have been avoided by joint planning and structural precision in the design phase.

3. There has been the lack of sustained participation by the GRB in Project policy review and monitoring at national and provincial levels. A glance at this assessment report makes clear the atmosphere of political and financial upheaval that the Government underwent during this period; but for sustainability of this or any Project assets, the government must participate fully.

4. There have been difficulties in coordination of timing among USAID, UNICEF, and the Peace Corps. Delays at the Project's start left the USAID contractor with a project manager already assigned and in the field but without a contract or money. Later, pressures to launch left no time for planning and studies that should have preceded the Project. The early delays soured relations during the initial period, and only the real competence of the staff involved eventually led to coordination and collaboration.

1.8 Key Recommendations

The major purpose of this assessment is, through analysis of process in this Project, to provide information permitting effective planning for other potential multi-institutional projects. Therefore, we will not detail Project outputs here, though they will be found throughout the report. Our spotlight centers on collaboration, coordination, and communication within the Project, the linkages that worked and those that didn't, and the lessons learned. From this assessment flow the following recommendations:

1. Detailed joint planning is an absolute necessity for the construction of multi-agency projects. This planning should be specific in detailing project structure, roles, responsibilities, decision-making scope, accountability, and administrative and financial management systems. It should take specific account of different agency procedures and design administrative frameworks to accommodate these differences effectively. Some measure (perhaps a workshop) should be developed to acquaint subsequent joint Project staff with the systems and procedures of all the players.

2. Realistic timelines must be developed that permit joint planning, take account of varying agency procedural time requirements, and allow for pre-project studies, procurement, and contracting. There must be a strong design-

fostered commitment to prioritize development of a project's components: "First things first." (Perhaps a set of evaluative times should be specified that trigger go/no-go decisions for follow-up activities.) Schedules should have built-in flexibility to allow time for the interaction required to coordinate complex activities.

3. Mechanisms should be sought at the planning stage to ensure congruent project launching and timely complementary inputs. Such mechanisms should be built on realistic understanding of sometimes incompatible agency procedures.

4. There must be a realistic assessment of the government's ability to participate in and sustain activities. This is also a design problem, and remedies should be designed for shortfalls. Government personnel roles should be designed and positioned with the requisite access and authority.

5. Counterpart relationships and training should never be short-changed in order to "get the job done." This is what development and sustainability are all about.

6. Development of the epidemiological surveillance capability was hit-or-miss in the Project. Plans should be made now to place it on a solid scientific and technical footing, including providing adequate training for the only two Beninese who have any knowledge of the database developed. It should be decided whether the epidemiological surveillance will be a Guinea worm surveillance system only, or a generalized HIS. It should be made compatible with the Ministry of Health's health information system.

7. We are now conditioned to believe that salvation lies only in the private sector. However, Benin's market capability is not yet strong. When important design choices are made (e.g., establishing a logistical system for spare parts for pumps), they must be pragmatic choices based on real analysis of the capacity of the system.

8. Although this Project has surmounted difficulties to achieve real successes, it is still necessary to measure the progress made toward the ambitious goal of changing the water-use habits of rural Beninese to improve their health and, perhaps, eliminate Guinea worm disease. The recommendation here is that, while important advances have been made through this Project, it will be necessary to consolidate and support what has been built if the goal is to be reached. Culture, behavior, and technology are not changed overnight. It will take a sufficient level of accepted innovation before people are brought to the threshold of real change.

2. Assessment Team Purpose, Planning, and Methodology

In the last days of the joint Benin Rural Water and Sanitation Project USAID, UNICEF, and Peace Corps launched a tripartite assessment team to evaluate strengths and weaknesses of this ground-breaking effort in interagency collaboration. The assignment had a three-fold purpose:

1. To provide feedback and information for redesign in a possible Project extension, or to serve as a design-constraints model in building further cooperative or joint projects:

2. To serve as an advocacy tool to encourage collaborative rather than vertical programs and projects;

3. To render the overall process of interaction in this Project conscious and visible to the agencies and personnel involved.

Although the team assignment was defined[2] "to assess the Guinea Worm Eradication Program collaboration," the first days in Benin made it abundantly clear that there was no separate Guinea worm eradication program to assess, in terms of the original planning and documentation of the Benin Rural Water and Sanitation Project. Referral to this report's Introduction section 3.3, *Original Project Plan and Amendments, and Evolution of Guinea Worm Eradication Activities*, will further clarify this statement. The team assignment has therefore been developed as an assessment of the interagency collaboration, strengths, and weaknesses in the Water and Sanitation Project for northern Zou. A particular effort has been made, however, to trace the way the need for a Guinea worm eradication program and the serendipity of early Project needs for

[2]See Scopes of Work in Annex 1.

precise geo-location information to permit water-point sighting have brought about activities not envisaged in original Project planning documents.

The assessment team was assembled in Washington for two days of team-planning meetings (TPMs) prior to departure for the field. This pertinent exercise served to establish a basic team ethos, define mission purpose, and enable early briefing and contact with ultimate agency users of report information.

Methods employed to generate information and develop views were the following: First, extensive interviews were conducted with all concerned parties at the national, provincial, district, and village levels. These included national directors of the technical ministries concerned, all Project technical personnel at the provincial level, a representative sampling of district teams (DTs) together with district supervisors, and one unannounced meeting with a typical village socio-health development committee (VSHDC).

Second, information collected in the course of such interviews was complemented by a complete review of the documentation. Admittedly, not all people or documents concerned were, in fact, available to the team. In an effort to overcome this problem, all information collected was cross-checked and referenced with at least two different sources before any analysis was attempted.

Several key constraints were encountered in the course of this review. The first was the absence of key players to interview. This is particularly true for the majority of Peace Corps volunteers who served at one time or another as health educators or supervisors and pump maintenance advisors. In addition, key technical assistance personnel had long since departed the country, and many of the former members of the district team had been reassigned.

Time was another serious constraint. Sufficient time did not exist to systematically track down reassigned personnel, or to undertake broad-based site visits to all of the districts participating in the project. Practical decisions were made, therefore, to mitigate these circumstances. Events were reconstructed by other means when possible. In the end, these arrangements proved adequate for the information needs of this assessment.

Finally, long conversations with Project principals and within the team have helped to elucidate the issues. The team held frequent brief planning meetings to ensure communication and logistics, and has met as needed during the report-writing period. The early substantive outline worked out in the Washington TPM served as a useful base for the final report.

3. Introduction

3.1 Geographic, Economic, and Social Setting

Benin covers 43,483 square miles of western Africa, running from humid tropical lowlands bordering the Bight of Benin northward to a sahelian region of scrub savannah, where it adjoins Burkina Faso to the northwest and Niger and Nigeria to the north and east, respectively. To the west lies Togo. Like Togo, Benin is seasonally water-poor in the south, and permanently water-short in the northern sahelian provinces. The long-term drought in the Sahel affects all aquifers, and sequential rain-short years cause the shallow wells and rivers to dry up. In the north the crystalline pre-Cambrian shield yields water only at depths requiring bore-hole technology. In the south the sedimentary strata pose particular problems for bringing in sufficiently endowed permanent wells. Neither boreholes nor deep wells are available to traditional well-digging technology.

Benin, then named Dahomey, obtained independence from France on August 1, 1960, entering a volatile political period. An educated and well-qualified political elite balanced leadership erratically between northern and southern factions. From 1960 to 1972 there followed a series of political experiments and crises until, in October 1972, Lieutenant Colonel (subsequently Brigadier General) Kerekou carried out a military coup which established a military "National Revolutionary Council." More shifting of the political sands resulted in the 1975 change of name from Dahomey to the People's Republic of Benin and the installation of a single Revolutionary Party. The subsequent institutional reorganization was extensive, Marxist in ideology, and centralized in tendency. Parastatals mushroomed, and the economy suffered.

The socialist period was economically so disastrous for already impoverished Benin that in 1985 Kerekou approached the IMF for help and began to move toward the West. By 1987 Benin had 101 billion CFA of external debt arrears. In 1988 the banks defaulted and closed, and there were no banking facilities for a year. Mostly

salaries and no program characterized Ministry budgets, and finally the government, bloated with personnel, could not pay the salary costs. From 1987 the IMF had negotiated toward structural adjustment, which was subsequently implemented from 1989 through 1991.

Civil unrest in 1989 culminated in the fall of the Kerekou government. A national conference was called in January 1990 and Soglo became President. Police-state constraints were lifted. The increasingly liberal posture of the government was met with increasing support from Western nations. As of this writing, however, absent donor-supported projects, it is excessively difficult for Beninese government agencies to find resources to implement much-needed development plans.

Ethnic groups are numerous in the six core Project districts of Bante, Savalou, Dassa, Glazoue, Save, and Ouesse (Zou Province). They are populated by Fon, Yoruba, Bariba, some Ife, Nagot, Maxi, Idaca, and occasional Haossa, Zerma, Dendi, and Peuhl (Fulani) peoples. Most are settled swidden farmers, practicing some variant of voodoo or ancestral cult that attaches them closely to the group land (sacred to their ancestors). As their near-in fields lose productivity, these farmers are forced to go increasing distances to plant and tend their subsistence crops of maize, manioc, sorghum, yams, beans, and millet. Because the distances are now too great, they are prone to stay in the fields in encampments during planting, tending, and harvesting periods. Any Guinea worm eradication efforts must be cognizant of the needs for potable water both in the residence locality and in the distant fields.

Haossa, Peuhl, and many Yoruba are nominal Muslims. The Haossa and Peuhl both descend from the great west African Sudanic empires. In this day the Haossa form extensive trading circuits whose members travel the breadth of Africa: They are merchants in the network of markets, and often ensure transport of the trade goods that circulate at the base of the trading pyramid. The Peuhl typically are pastoral nomads. But people of both ethnicities today have sedentarized into village residence in the Project zone.

The health status of Benin's populace is precarious and vulnerable. The infant mortality rate per thousand live births stands at 116.0 in the most recent estimate; life expectancy now hovers at 50.3 years. The population growth rate is estimated at a high of 3.4 percent per year, for a 1988 projected population of 4.5 million.[3] Beninese suffer greatly from infectious and parasitic diseases. The greatest scourges are malaria, measles, and the water-borne enteric diseases, but leprosy, filarial maladies, schistosomiasis, onchocerciasis, tetanus, and tuberculosis, as well as Guinea Worm disease, add their burden to rural misery in this tropical zone.

3.2 Early History of the Project

3.2.1 USAID

The USAID Benin Rural Water Supply Project had been planned from 1978, and was authorized in February 1980 for a five-year life. Guinea worm eradication was never an element in this Project as written. A Project Agreement was signed in August 1980, followed by a Full Funding Amendment in December of that year. The Project was initiated, and continued until December of 1981, when it was suspended because of strained relations between the two countries. Of the original budget of $6,707,000, $457,906.78 had been spent. When the Project was suspended, Project personnel, vehicles, and pumps were withdrawn to projects elsewhere; some geological survey equipment was given to UNICEF's continuing in-country water-production program.

In 1983 water supply became critical in Benin, because of the ongoing drought, which had worsened in 1981. In Zou Province rainfall was 30 to 40 percent below normal from 1981 to 1984. In 1983 the GPRB asked for donor emergency assistance, and wrote a forward-looking water plan with health education, latrine construction, and Guinea worm eradication components.

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[3]The last census was in 1979.

As the Kerekou government sought to improve its relations with Western-bloc nations, a climate was established permitting resump tion of the suspended Benin Rural Water Supply Project. With no A.I.D. Mission yet in Cotonou, the Lomé A.I.D. office brought in an assessment team to explore Project redesign. The Project was rebuilt to collaborate with UNICEF, whose long-time Benin pro-gram of water provision complemented USAID's, country goals. At this time sanitation and health education became objectives in the Project design. Guinea worm disease reduction by 30 percent entered the Project as an indicator of successful movement toward health improvement goals. Though reduction of Guinea Worm disease was conceived as a desirable outcome of the water and sanitation project, it should be understood that this Project was not designed to establish a Guinea worm eradication program, but was conceived only as a water and sanitation effort.

3.2.2 UNICEF

Since 1980, UNICEF had been engaged in interventions in the Benin water sector. The first phase of the UNICEF project was carried out between 1980 and 1982 in collaboration with UNCDF. The second phase (1983-84), also in collaboration with UNCDF, was financed by OPEC as a UNICEF "noted" project, or one for which UNICEF would seek funding. By 1985, UNICEF had in-stalled over 360 pumps in Benin in the provinces of northern and southern Zou and Bourgou.

The 1985-88 joint UNICEF/GRB cooperative plan included an integrated water and sanitation project, which was approved by the UNICEF Executive Board in April 1984 as a "noted" project, With this convergence of objectives, USAID and UNICEF in March 1986 signed a USAID-funded Grant Agreement under which UNICEF would have responsibility for the water-supply component and some sanitary activities in a joint Rural Water and Sanitation Project for northern Zou Province. It is useful to note that both UNICEF and the GRB placed high priority on the provision of potable water in areas where dracunculiasis and other water-borne diseases were prevalent.

3.3 Original Project Plan and Amendments

3.3.1 Project documents

The first Amendment to the original Project document was the Full Funding Amendment of December 19,1980. When Project activity resumed, Project Agreement Amendment #2 of Dec. 6, 1985, became the official Project document, providing an amplified description of project elements as now planned. The Project is therein described:

"The Project is composed of the following three components:

- o a rural water supply component involving the drilling of boreholes, installation of pumps, and construction of a limited number of rain-catchment cisterns;

- o a rural health intervention component involving the training of outreach agents and ultimately villagers to make them trainers-of-trainers, in health education, sanitation, village mobilization and organization, pump maintenance and repair, and in epidemiological survey and data base collecting; and

- o a sanitation component consisting of pilot efforts in sighting, construction and maintenance of pit latrines, as well as water quality testing. Annex 1 attached, amplifies the above definition of the Project. **Within the limits of the above definition of the Project, elements of the amplified description stated in Annex I may be changed by written agreement of the authorized representatives of the Parties named in Section 8.2, without formal amendment of this Agreement."**

The original 1980 Project had focused on the northern provinces of Atacora and Borgou, but in the three-year interim other donor water programs had become active there. Because Zou Province had the highest incidence of Guinea worm disease in the country, and a water program was much needed, the now joint USAID/ UNICEF focus was turned to Zou. Guinea worm disease was now a reason, and an indicator, but not a central objective.

The Project Assistance Completion Date (PACD) was now set at December 31, 1990. But there is confusion here, as another end-date of March 31, 1990, seems to have intervened. (See below re Project Amendment #3, of March 30, 1990.)[4]

3.3.2 Donor agency roles

UNICEF was to undertake and hold lead-agency responsibility for water resources development:

- o borehole construction;
- o pump installation;
- o training of GRB water-supply development technicians;
- o chemical water-quality analysis and mapping;
- o training villagers and mechanics for pump maintenance with assistance from the Project technical team[5] and Peace Corps volunteers;
- o establishing a functioning logistics system for spare-parts supply; and
- o undertaking (some) latrine construction and environmental sanitation in a separate and complementary effort

Water-quality analysis was, in the original plan, supposed to be handled by the CARDER Agency of the Ministry of Development-ment, with PRAGMA bringing in the testing kits. Subse quently it

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[4]All Project documents were not available, and some fundamental ones were obtained only in the last week of the assessment team's visit. The paper trail on some points is obscure.

[5]The Multidisciplinary Supervisory Operational and Technical Unit of the Project, henceforth called either the "technical team" or the "socio-health team"

was thought that the DH would handle it, but when neither was able, the UNICEF technical team, with assistance from Peace Corps volunteers, undertook the physico-chemical analysis. The GRB Directorate of Bio-Medical Analysis Laboratory (DI-LABM) handled the bacteriological testing. PRAGMA planned to bring in a short-term consultant for quality control.

The USAID Contractor PRAGMA was to have overall responsibility for:

- o project management and administration,
- o a socio-health program involving community mobilization and organization and health education,
- o rain-catch cistern construction,
- o latrine construction and sanitation,
- o village mobilization for pump maintenance,
- o basic epidemiological surveillance plan and baseline study, and
- o construction of Project headquarters.

The Peace Corps expected to make the following contributions to the Project:

- o PCV health education supervisors for the socio-health component,
- o PCV health education supervisors for assistance in data collection for the epidemiological surveillance effort, and
- o PCV pump repair supervisors to provide training in pump maintenance and repair.

Amendment #3, dated March 30, 1990, made the following changes: The Project life was to be extended to December 31, 1990; the number of positive wells was augmented by 50, to a total

of 275; the Project grant funding level was raised from $6,707,000 to $7,582,000; the pump maintenance plan was to be revised forthwith; the rain-catch cisterns component was deleted,[6] and feasibility studies on alternative systems were suggested. The latrine program goal was changed to read 100 community and 300 family latrines. Health education training materials were to be developed for latrine construction, maintenance and use, and for training on the responsibilities of health committees. A change in PRAGMA Project management was noted with the departure of the senior technical adviser and the civil engineer. The Project was to move integrally to Bohicon.

Amendment #4 is now pending for a final extension, possibly through September of 1991.

3.3.3 The Plan

Originally the goal of the Rural Water Supply Project was to assist the Government of Benin qualitatively to improve the health and living conditions of the rural population. The purpose was "to assist the Govt. of Benin to improve health practices and the adequacy and quality of water supply and sanitation facilities available to the rural poor in selected districts of central Benin."

A 30 percent reduction in Guinea worm disease incidence was to serve as an indicator for the success of Project efforts.

The Project was planned as a joint endeavor between USAID, UNICEF, Peace Corps, and the GRB; it was to create a structure at the provincial level that would deliver services at district and local levels.

The Ministry of Plan (MP) was to chair a Policy and Monitoring Committee at the national level, which would include elements from the Ministries of Equipment and Transport's (MET's) Department of Hydraulics (DH); the Ministry of Health's (MSP's), Department of Hygiene and Sanitation (DGSA) and Department of

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[6]This was now deemed unnecessary because of the unexpected level of success in providing positive boreholes.

Health Education (DESFOC); and the Ministry of Social Affairs (MTAS). USAID, UNICEF, and Peace Corps representatives were also to sit with this body. The three line Ministries - MET, MSP and MTAS - would each supply the Project with personnel at both the provincial and district levels.

There was a question as to whether the MET or the MSP should act as lead Ministry, but the Ministry of Health was itself in need of restructuring. The MET Department of Hydraulics had worked closely with UNICEF for years, and possessed the structure and the personnel. After a considerable search for a national coordinator for the Project, the Department of Hydraulics named the excellent present incumbent.

USAID/Lomé was to fund and manage the Project, providing the management unit through a contractor (PRAGMA), which would assure planning and training of the provincial and district mobilization teams, mobilization of the villages, health education, and design and construction of latrines in cooperation with the UNICEF sanitary engineer. This unit would also supervise the construction of Project headquarters at Bohicon.

Both UNICEF and the Peace Corps were viewed by the USAID Project as subcontractors to that Project, to provide specific component services. UNICEF (working with the DH) was to drill and equip 225 wells, and collaborate in construction of latrines. UNICEF was also responsible for the training of drilling crews and pump mechanics. The Peace Corps was to provide volunteers for local level jobs as pump-repair supervisors and as health educators.

From the Ministries would come:

National Level:	the monitoring committee, drawn from ministries's national-level technical directorates, and the project coordinator, provided by the lead ministry (Equipment);

Provincial Level:	A provincial coordinating committee composed of the regional directors for Hydraulics, Health Education, and Social Affairs, and technicians to form the multidisciplinary provincial training team for village mobilization and health education;
	the DH technical team, including geology and engineering, drilling, garage, and logistics personnel;
District Level:	district chief medical officers (médecins chefs) to supervise the socio-health program in the villages, and district teams, typically to be composed of two nurses, two sanitarians, and two social-worker *animateurs*.

[Note: These teams were to work and coordinate with the médecins chefs, usually located at the sub-prefectural (district) level.]

The USAID Contractor was to develop the village mobilization and health education plan. Lists of villages needing or requesting water points were to be forwarded to Project management, which would choose localities according to agreed criteria, organize village committees, prepare the villages for pump management responsibility, and begin health education. The Project was then to advise the UNICEF hydraulic team when and in which villages to proceed. Once the water point was provided, the Project would continue health education and pump monitoring, and begin to motivate for environmental sanitation and latrines.

UNICEF teams were to survey sites proposed, determine water-bearing structures, and develop the water point(s). Although a need for alternatives to drilled wells was foreseen (e.g., stream captation, cisterns for rain-catch water), in fact they never proved necessary, and were therefore eliminated from the Project.

3.4. Summary of Project Accomplishments

Description of Expected Project Outcome	Amendment #2 06/12/85	Amendment #3 03/30/90	Executed by 06/28/91
Functioning, replicable system for coordinating integration of health interventions into all water supply and sanitation projects.	1 replicable system		100% completed
Provincial and district Social Affairs, Health Education, and Sanitary Engineering agents and other village level workers trained in village mobilization and in the conduct of village health campaigns.	about 50 agents and village-level workers		100% completed
Functioning village health committees in each participating village.	225 health committees		459 village health committees
Reliable, clean village water supplies in project villages.	225 wells/pumps 100 rainwater catchment systems	275 wells/pumps catchment systems replaced by feasibility study of alternatives	309 wells with pumps no rainwater catchment systems
Pump installation and maintenance/repair program in each participating village.			100% completed
Master pump maintenance plan and logistics plan.			Completed
Upgraded technical competence of Hydraulics personnel assigned to drilling/pump installation teams.	20 (8 core personnel)		100% completed

3.4. Summary of Project Accomplishments (cont.)

Description of Expected Project Outcome	Amendment #2 06/12/85	Amendment #3 03/30/90	Executed by 06/28/91
Warehouse and repair shop for equipment and vehicles, a provincial Project office and an improved training center.			Completed December 1989
Adequate village-based capacity to construct and maintain rainwater catchment systems, resources permitting.	150 villages	Deleted from project	Deleted from project
Sanitary excreta disposal facilities constructed and maintained in selected villages.	100 single-pit latrines	100 community latrines 300 family latrines	109 community latrines 261 family latrines
Adequate village-based capacity to construct and maintain sanitary excreta disposal facilities.	225 villages		11 sanitary agents 13 district masons 100+ village masons
Upgraded skills of rural sanitarians and rural health workers.	11		26
Water-quality testing of each new well, subsequent testing as appropriate.	1,500 samples of water (1 to 3 times per well, as appropriate)		180 physico-chemical tests, map of water corrosion, 421 bacteriological tests
Upgrade skills of all personnel receiving long- and short-term participant training.	2 long-term, 5 short-term		100% completed

3.4. Summary of Project Accomplishments (cont.)

Description of Expected Project Outcome	Amendment #2 06/12/85	Amendment #3 03/30/90	Executed by 06/28/91
Plan for training needs, and recommended training facilities and schedule.			100% completed
Commodity and procurement plan.			100% completed
USAID-UNICEF cooperative agreement.			Grant agreement 03/12/86 Amendment #2 01/01/91
Evaluations	3	2	1 completed.

4. Interagency Collaboration, Coordination, Communications By Project Component

4.1 Institutional Setting and Project Organization

The Benin Rural Water Supply and Sanitation Project (680-0201), as redesigned in 1984-85, involved the collaborating of the following elements, each possessing its own "personality" and operating mode:

- o GRB Ministries at national, provincial, and district levels:

  the Ministry of Plan;

  the Ministry of Equipment: Department of Hydraulics, Provincial Department of Hydraulics, DH Project Water Production Team;

  The Ministry of Social Affairs: Provincial Department of Social Affairs;

  The Ministry of Health: Department of Health Education, Department of Hygiene and Sanitation, Provincial Departments of Health Education and Sanitation, and District chief medical officers (médecins chefs); Project multidisciplinary socio-health technical team; and Project multidisciplinary district outreach teams;

- o A.I.D./Washington, USAID/Lomé, USAID/REDSO, and the USAID contractor, PRAGMA;

- o UNICEF/New York, UNICEF/Cotonou, and the UNICEF Project water-production team;

- o Peace Corps/Washington, Peace Corps/Cotonou, and Peace Corps volunteers;

Against the background of the Project Plan as seen in Section 3.3, it is useful to scrutinize the characteristics of these institutions and entities to understand the process of their collaboration.

4.1.1. A.I.D.

The four A.I.D. elements involved are AID/Washington, a many-layered structure; USAID/Lomé, the Mission funding and managing the Project; USAID/REDSO/Abidjan, the regional technical office called upon to control contracting and help resolve engineering problems; and PRAGMA, the USAID contractor carrying out the Project in Benin, supported by the PRAGMA Washington home office.

In A.I.D./Washington, resources are mobilized and brought to bear. The operating mode is for projects that are extensively designed and implemented with regular evaluation and controls. The Rural Water Supply Project was designed, launched, suspended, revived, reviewed, redesigned, accepted, relaunched, and monitored by the Office of Central and Coastal West African Affairs, which also handled the grant agreement with UNICEF/NY. A.I.D.'s Office of Health provided crucial workshop and training materials through the WASH Project.

USAID/Lomé became responsible for the Benin Rural Water Supply Project when USAID/Cotonou closed out in 1981. USAID/-Lomé has a busy portfolio in Togo, is distant from Benin, and political effervescence on both sides makes for "technical difficulties" such as unexpectedly closed borders and frequent loss of telephone contact. Staff is extremely limited and has a heavy work load. In this context, it has taken from four to six months for documents sent by the Project (PRAGMA) to reach Washington or Abidjan through USAID/Lomé.

USAID/REDSO is the technical office serving the whole West and Central African region: Its experts travel constantly. The process for checking legalities and for contracting is often consummately slow. REDSO provides important resources for the regional

offices, but also constitutes another node in the cumbersome process that moves A.I.D. paper, and with it the fortunes of Projects in the field.

A.I.D. executes its field programs through the medium of contracted agencies, in this case PRAGMA, the implementing agency in the field for the Rural Water Supply and Sanitation Project. Medical Care Development International and Bryler, two other Washington-based firms, subcontracted some technical assistance and procurement elements of the Project for PRAGMA.

In the A.I.D. scheme, PRAGMA was to supply overall Project management and administration, and to assure the elements of the socio-health program, to include the training of trainers and development of teams for village mobilization, health education, and pump-maintenance planning and management. Latrine construction, construction of the headquarters center, organization of a preliminary KAP Study, collection of communities' baseline data, and development of an epidemiological surveillance plan completed the content of the PRAGMA assignment.

PRAGMA placed in the field a Project team consisting of a senior technical advisor/project manager, a health educator, and a civil/sanitary engineer. A short-term technical assistant provided water-quality analysis evaluation. MCDI-Bryler subcontracted to PRAGMA the services of a very senior sanitary engineer to assure long-term support and technical supervision. General support was provided by Washington-based PRAGMA.

4.1.2 Peace Corps

From the redesign phase in 1985 and relaunch of the Project, Peace Corps volunteers provided a significant element of the overall Plan. The role and training of the volunteers are described exhaustively in sections 4.3, 4.4, 4.7, and 4.9. In this section we will only remark that the Peace Corps' looser structure provides a process for placing volunteers in the field that is considerably faster than

A.I.D.'s project development procedure. The Peace Corps' flexibility has not always served it well in the context of this Project, where much greater preliminary definition of roles and jobs might have made life easier and more effective for volunteers in the field.

4.1.3 UNICEF

An executive agency of the United Nations, UNICEF works directly with national governments to develop, fund, and execute joint cooperative programs aimed primarily at the concerns and needs of women and children. Beyond its own program, UNICEF may also assist governments to find sponsorship and funding for other projects that a government may wish to undertake. These are placed in UNICEF's portfolio of "noted projects" for which donors are sought. UNICEF may also serve as executing agency for these "noted projects" once funding has been found. UNICEF may have money from several donor sources applied to one project or program. Where UNICEF acts as an executing agency, it provides direct-hire contracts to individuals with the requisite expertise, rather than to contracting firms.

It should be noted that UNICEF has a different approach to project design and evaluation from that current in AID. Moreover, UNICEF and A.I.D. do not follow parallel administrative and accounting procedures.

4.1.4 GRB

In this Project the Government of the Republic of Benin is represented at national, provincial, and district levels by four ministries. During the life of the Project, the government has been almost constant prey to political instability, frequent changes in personnel, and paralysis due to economic and financial crises. Because of these crises, government employees have received no salaries for much of the Project period. The much-needed structural adjustment forced the Beninese Administration to cut government jobs, and this affected the Project drilling teams.

4.1.4.1 DH

The Hydraulics Department (DH) of the Ministry of Equipment (MET) as the Project lead agency has provided the services of the national coordinator. The DH, with long years of experience in harness with UNICEF, has developed qualified and capable teams. Training offered through the Project has augmented these skills, but more training is still sought.

4.1.4.2 MTAS

Ministry of Social Affairs (MTAS) officials have a program designed to carry on rural animation and mobilization, which is very constrained by the lack of resources. They therefore welcome donor projects that can provide them the vehicles to reach their target groups. The constitution and training of the team elements offered by the MTAS are fully described in Section 4.4.

4.1.4.3 MSP

The Ministry of Public Health (MSP) is long on doctors and short on installations, with limited training of cadres, and is exceedingly short of funds. It has been able to do little more than pay salaries. Maintenance of facilities and outreach programs are mostly beyond its resources. A major restructuring is now in the planning phases with World Bank support. Through the Rural Water and Sanitation Project, the MSP has been able to develop outreach training and capability for assigned personnel of the Project and district teams. Directors at both the Departments of Hygiene and Sanitation and Health Education stressed the utility of the Project as a vehicle to train their personnel, and to meet Ministry objectives. They will expect to use these cadres subsequently as trainers for other Ministry personnel.

District chief medical officers (*médecins chefs*) were to supervise the activities of district teams, with regular contact and coordination. But *médécins chefs* are exceedingly busy men and in some

instances have not been available to Project liaison. Furthermore, all have been reassigned in the recent political changes, and the assessment team has been able to reach only one with knowledge of the Project.

4.1.5 Financial management constraint

Central accounting arrangements both within and between A.I.D./Washington and UNICEF (New York), with slow transmission time to the field, have meant that budget status information was not available in the field when it was needed. Both the USAID-/Lomé project officer and the UNICEF project chief of party did not have needed management financial information. Reports, traveling between the two agencies, and from center to the periphery, were sometimes as much as a year late.

4.2 Administration and Management

4.2.1. Management structure and plan for coordination and communication

The A.I.D. Project proposed structures and activities at four levels: national, provincial, district, and village.

At the national level a National Coordinating Committee (Comité de Suivi) was tasked to review Project planning and resolve problems, and to monitor progress toward planned objectives. The ministries of Equipment, Health, Labor and Social Affairs, Plan and Foreign Affairs, USAID, UNICEF, and the Peace Corps were to coordinate in this committee. The Project Start-Up Workshop of March 28-April 11, 1987, defined the Coordinating Committee as the overall management organ for the Project. The Ministry of Equipment and Transport became the lead ministry, with responsibility for the Project lodged in the Directorate of Hydraulics.

Acting for and reporting to this committee was to be a national coordinator designated by the Ministry of Equipment and agreed on by USAID, UNICEF, and the Peace Corps. Coordination of all components to achieve the Project purpose was the responsibility of

the national coordinator. The counterpart to the national coordinator was to be the A.I.D./PRAGMA project manager and senior technical advisor, who, with the UNICEF chief of party, was to assist and advise the national coordinator.

The Project would work at the province level. The PRAGMA team technical assistants for administration and management, health education, and engineering, the UNICEF water-supply technical team, joined with the DH technical team, and the GRB socio-health training team were all slated to work out of the Project headquarters to be constructed at Bohicon. The Project originally called for an interministerial provincial coordinating committee to tie the Project's work into the provincial directorate level, but after the start-up workshop, this linkage appears not to have been active.

At the district administrative level district teams were to be developed consisting of sanitarians, health-educator nurses, and social worker *animateurs*. Health-educator Peace Corps volunteers were to work with and in these teams, while other Peace Corps volunteers were to assure the system of pump maintenance. The multidisciplinary teams were a major innovation, providing for the first time a cross-cutting development outreach capability. It was originally planned for these teams to be supervised by the district médécins chefs. Reporting requirements were to be structured to assure feedback from village and district levels, and to pass through provincial supervisors to the national coordinator, permitting effective Project monitoring.

4.2.2 Timeline envisaged for Project development

It was intended that Project activities would cover a five-year period from the signing of Project Agreement Amendment #2 December 6, 1985, to the Project Assistance Completion Date, proposed as December 31, 1990. Once the Project Agreement was signed, A.I.D. was then to engage in a Cooperative Agreement with UNICEF. From this juncture, A.I.D. and UNICEF would each seek to recruit Project technical teams, and the GRB would find and nominate a national coordinator. It seems at that time to have been USAID's intention to recruit the long-term technical

team as qualified individuals through direct-hire personal services contracts. It was anticipated these people would arrive at post about eight months later, or by August of 1986, at which time the UNICEF team was expected also to be in country.

The "Amended Amplified Project Description" proposed to use the first months of 1986 to generate, through short-term technical-assistance consultancies, plans for management; accounting; reporting schedule; procurement of equipment, commodities, and vehicles; pump storage and installations, and pump maintenance. A plan for the deployment of Peace Corps volunteers was to be developed also in this period. These short-term consultancies were to begin no later than six and a half months after Project signing (mid July 1986). During this stage a KAP Study would lay the foundation against which to develop effective health education materials and approaches.

The Project headquarters center was to break ground in Bohicon on GRB-provided land during the eighth month from launch, and it was hoped that a headquarters, warehouse, repair shop, and training center would be completed by the tenth or eleventh month (November 1986). By the ninth month village selection should be begun in northern Zou. Training plans were to be completed during the eleventh month. Two to three months of socio-health intervention should prepare village clusters for subsequent drilling and pump installations.

Benchmarks were provided: 100 positive wells by month 21; 225 positive wells by month 33; 225 equipped wells by month 36; all Project activities under way in each participating village by the end of month 36.

4.2.3 Methods and approach

The Project Agreement Document did not spell out a method or approach, but it can be assumed from the roles provided that collegial interaction was expected at all project levels, and the "training of trainers" plan invoked a cascading system of information dissemination. The USAID plan devolved central responsibility upon the national project coordinator, who would be the Project's

pivot between the Beninese political and policy level, implicated technical and administrative ministry levels, technical assistance, and the Project. All reporting, all planning, and all trouble-shooting would center here.

Administrative action, financing, and project management assistance to support the Project and the coordinator would be supplied by the USAID senior technical advisor and team. The UNICEF chief of party would manage the water-supply component team and the UNICEF-supplied technical assistants, and would advise the coordinator on matters relevant to the component.

Village choices for well sites were to be based on community commitment and successful mobilization, and village organization was to precede drilling and provision of a water point at all times.

4.2.4 Implementation review

4.2.4.1 Project real time: slow beginnings

Any attempt to follow management of this Project through the vicissitudes of implementation must begin with the discrepancies between the planned and actual timelines. The documents do not show, nor does available memory clarify, the point at which USAID decided to employ a contracting firm rather than direct-hire individuals to form the Project technical assistance team.

The short-term planning consultants did not arrive as expected in July 1986, nor did the consultant to prepare the KAP study. USAID determined to hire Mr. Yellot as project senior technical advisor and manager and deployed him to Cotonou in November of 1986 as consultant, but with no money and no transportation. Shortly he was to have Peace Corps volunteers as well, with no jobs for them. PRAGMA, in collaboration with Medical Care Development International, was chosen to manage the Project, but contracting was delayed first by the legislative need for clarification on the situation of Benin's foreign debt arrearage, later by the exigencies of A.I.D.'s contracting procedures. PRAGMA did not have a contract, nor the ability to disburse serious funds until, May 1987. The full PRAGMA team did not arrive until July of that year.

Meanwhile, the GRB had nominated a project national coordinator, who was accepted and installed by early 1986. Government personnel from participating ministries had been assigned to the project at national, provincial, and local levels.

A.I.D. signed a Grant Agreement with UNICEF on March 12, 1986, and UNICEF then chose an experienced well-drilling team. Funds were "called forward" for salaries as of that time. Subsequently, the new chief of party arrived in country in January of 1987, but was occupied on other UNICEF projects for FENU, FAO, PAM, PNUD, IDA/CARDER and others, because the USAID Project suffered the described delays. He was finally assigned to the Rural Water and Sanitation Project as of September 1, 1987.

The Peace Corps, without long project development time, had nine volunteers in country for Project health education jobs by December 1986. The volunteers were assigned to their duty stations and to "work with the district teams," but their jobs had not been defined, and their situation was ambiguous.

The Project coordinator and counterpart occupied this time by developing work plans. From the end of 1986, when lists of villages proposed for water points began to come in, it became evident that every list added to the confusion: Inherited colonial administrative designators did not correspond to ground-truth, nor did they fit with villagers' sense of the jurisdictions to which they belonged. Existing maps were totally inadequate. As a result, some localities escaped the system, while others appeared under several different names.

The absolute need for geographical and social coherence in locating communities and defining the Northern Zou working region prompted the study undertaken in December 1986 and early 1987. The PRAGMA senior technical advisor, the part-time UNICEF sanitarian, the Peace Corps health-education volunteers, and the district teams, with the valuable help and guidance of Dr.

J.P. Chippaux of ORSTOM[7] extensively traveled and mapped localities of the six provinces of Northern Zou. This first study was based on Project management needs for geographical information. Later it was termed "une étude du milieu," or baseline study, but it was never a scientifically designed baseline study. It did, however, make a beginning collection of data, including data on the incidence of Guinea worm infestation, based on the principle of "cases viewed." A "Fiche de Renseignements" (or data entry form), with standardized criteria, was filled out for each locale. This was the serendipitous beginning of the epidemiological surveillance system, although no epidemiologist consultant had a hand in its design.

It was at this time that, in the minds of Project members, the reduction of Guinea worm disease became a major objective of Project efforts, even though it had not figured in a major way in the planning documents.

When the Project obtained computers, Mr. Yellot began to build this elementary field information into an MIS/GIS database (D-Base 3+), which he subsequently passed to the UNICEF water-supply team, who added hydraulic information as the waterpoints were constructed. Subsequently, each record showed the site location, community characteristics, whether a committee had been formed, its bank account and balance, training received, and resources.

In January 1987, USAID/Lomé requested the WASH Project to mount a five day start-up workshop for the Project, and this was held in April 1987. It was a useful exercise to define the jobs and roles across the ministries, and to achieve consensus on responsibilities and communication. Peace Corps volunteers participated fully. However, neither the UNICEF chief of party nor the full PRAGMA team were yet there to participate.

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[7]Dr. Chippaux is a noted authority on the epidemiology of dracunculiasis (Guinea worm disease).

In the beginning of September 1987, the UNICEF team was complete, and impatient to begin work in the Project area, but the newly arrived PRAGMA health educator had not yet had time with the Project socio-health team to develop training and mobilization plans, or train the District teams — much less to begin work preparing the villages. There was a period of real confusion, in which UNICEF drilling teams appeared in unprepared villages in Dassa. The need for communication, coordination, and acceptance of a unified chain of command was most apparent in this moment of breakdown.

A series of tense meetings in the end of November and early December 1987 shook out some of the problems. They concerned 1) order of precedence of activities; 2) reassessment of Project activities given the late beginnings and different understandings of the intended end-of-project date; 3) the need for regular exchange of reports and information between the partners and general reporting schedules; 4) the need for mutual comprehension of staffing plans and needs; 5) responsibilities for and participation in project elements; 6) delays in ordering and tardy arrival of material, and how to cope with these problems; and 7) changes needed in budget allocations.

These beginning problems were the biggest hurdles the Project had to face, and most stemmed from the differences in time and process inherent in the separate institutions involved. Project managers had to deal with these givens and resolve the problems that were presented. The national coordinator remarked that chiefs of party for both UNICEF and USAID/PRAGMA were goal-orientated, problem-solving individuals, and this was the major corrective mechanism where problems were encountered.

4.2.4.2 Planning

The original implementation plan, as discussed above, could not be met. Nevertheless, the development of work plans filled early 1987. Crash planning for socio-health components began in August 1987, and the first training of trainers took place in September

1987, involving five district teams[8]. Once the flow of activities was engaged, villages were prepared along specific axes, and UNICEF drilling teams were then informed and invited in. Few problems were encountered once the process had begun. Monthly coordination meetings were attended by the national coordinator, the USAID/PRAGMA senior technical assistant, the UNICEF chief of party, and the UNICEF/DH team. Quarterly planning conferences included all Project elements, each one followed by a quarterly review meeting in which accomplishment was detailed.

4.2.4.2.1 Changes in Project orientation

In the Amended Amplified Project Description for the Benin Rural Water and Sanitation Project, Project objectives are thus described: "...These activities in turn should accomplish the project objectives of decreasing the incidence of water-borne diseases, morbidity and mortality rates, including a 30% reduction in the incidence of Guinea worm in targeted villages, reducing urban migration and water shortages, improving health practices and access to sanitation facilities, and strengthening the Grantee's ability to continue similar activities after termination of donor funding." Project outputs, as listed, contain no further reference to Guinea worm, but a reduction in GW disease would provide a ready indicator of the successful health benefits a potable water project could engender.

Growing interest throughout the West African dracunculiasis-endemic region focused on the idea that Guinea Worm disease could be abolished. In 1986 the World Health Assembly focused on the spotlight on this scourge, and passed a resolution urging that the disease be eliminated. In 1987 the U.S. Congress held hearings, and encouraged support for GW control programs. A.I.D. responded with a plan to add GW control components to ongoing water projects in endemic zones. In 1988 the WASH Project produced a manual for adding GW control components to water and sanitation projects. In the Benin Project, the first 1986-87 geographical assessment pro-

[8]In Ouesse District, the teams were prepared differently in order to work with the Swiss project active there.

vided a modest base on which to build for Guinea worm incidence surveillance. We are told the Project carried out cross-section surveys in 1987-88 and the three subsequent years, at the two peaks of the case-presentation season (December and April) in the Project zone, although this assessment team has been able to see only the document that was presented in March of 1990.

As outgrowth of Project efforts, in 1988 UNICEF, with some USAID funding, sponsored a Benin National Conference on the reduction of Guinea worm disease, which led to the development of a national plan. From February to June of 1990, a National Guinea worm Survey was carried out by UNICEF, with heavy input from Project staff.

Though the Project was conceived as a water and sanitation effort, not as a Guinea worm eradication program, Mme. Covey of the Ministry of Plan advised, "...The Government of Benin saw the high incidence of Guinea worm as the reason for locating this Project in the Province of Zou...." Mme. Nassirou of the Ministry of Social Affairs offered, "...This Project gave the Ministry for the first time the possibility to work for Guinea worm control...." And Mr. Wentling, Director of USAID/ Lomé said "...but Guinea worm control has always been a part of the Project...."

4.2.4.3 Staffing and technical assistance

Staffing in the Project, starting from the national coordinator, has been uniformly good. Mr. Dossou-Yovo has known how, with flexibility, humor, and justice, to "smooth the wake." Professional competence and personal initiative have characterized the long-term technical staff. Conflicting needs and interests have largely been dealt with in a professional way to further the work of the Project, and a reasonably good coordination has been achieved.

Unfortunately, the USAID/PRAGMA senior technical advisor left the Project at the end of February 1990, and the full burden of Project management fell upon the health educator. Mr. Yellot's departure was the loss to the Project of a dynamic manager. Mme. Laurin has risen to meet the needs of the final period.

There have been early terminations by the UNICEF mechanic and hydrogeologist, which have been compensated for by the wide-ranging capability and experience of the master driller and the chief of party. It should be noted that the early group of health educator Peace Corps volunteers who arrived in December 1986 and spent a year without a defined job or role were deeply discouraged by this experience. Of the nine who began the tour, four left early (by April 1988), and there was one medical separation. Five out of nine is an extraordinary early termination rate for Peace Corps, which is used to no more than 10 percent early loss.

The GRB staff at the Project level is highly competent, devoted, and dynamic. District teams have developed into a resource that should not be wasted but scrupulously recuperated by follow-on projects. The national coordinator expects to write a final memorandum detailing the uses the GRB intends to make of the human and other resources developed during the Project. District teams have not always been complete, as the provincial and district ministry directorates have not always provided sufficient cadres for the Project.

At the national level, the National Coordinating Committee met and followed the early phases of the Project in 1986-87. Because of political upheaval and changes in ministries' personnel, this scheduled governing committee has not met since 1988. Nor has the planned provincial coordinating committee followed through on its role for Project liaison and oversight. This deficiency in liaison and monitoring activity has, in some senses, left the Project isolated from regular government channels. It should be noted that there has been concern in some government circles that the Project, as a pilot effort between three donor agencies and three line Ministries, has proven an anomalous entity operating its program isolated from general lines of ministerial action and development activity.

This evaluator believes these concerns unwarranted and feels that the Project would have been fully integrated into GRB lines of endeavor if the planned liaison mechanisms had worked.

4.2.4.4 Decision making

When one looks at administration and management during the life of this Project, it is useful to bear in mind that two very different and rather parochial perceptions of the Project structure were held by UNICEF and USAID, because time and again this interfered with coordination between the partners. (See section 4.1.6.1.) An insufficient definition and agreement at the beginning on the roles and relationships of the donor agencies in the organization of the Project have, at different times, led to confusion and some rancor concerning responsibility for and participation in Project components and cost-sharing.

In A.I.D.'s view, this was an overall A.I.D. project, funded at $6,707,000, in which UNICEF had been granted $1,092,000 to provide 198 person-months of technical assistance to encompass the rural water-supply component and limited sanitary interventions. UNICEF would also provide some funding, partially in-kind. The Peace Corps would contribute $475,000 to cover 600 person-months of volunteer services and PCVs would carry out action at the local and district levels in collaboration with the GRB district teams. All Project activities were to be supervised by the national coordinator, assisted by the USAID senior project technical advisor, who would assure project administration and management. Other Project components would be developed by Beninese cadres with the assistance of the USAID technical assistants. This was, clearly, an A.I.D. project in which UNICEF subcontracted a component.

But for UNICEF, this was a "noted project" for the Government of Benin, for which it had sought and received funding from USAID to continue UNICEF activities in the water sector. Thus in the accomplishment of this, its "Phase 3" program, UNICEF did not recognize the validity of overall project management by and through the USAID senior technical advisor.

What resulted was generally a competitive bilineal set of decision-making efforts, instead of one unified chain of command for the overall Project effort.

4.2.4.5. Relevance and timing of inputs and outputs

There were some early problems with timely importation of material. The GRB did not permit tax-free importation by UNICEF of drilling equipment and supplies as anticipated. This was resolved when USAID/PRAGMA undertook importation under Embassy auspices. The slow delivery of pumps early in the Project was overcome by using pumps UNICEF had in stock, and replacing them with those on order.

In specific instances, the GRB did not provide promised personnel to be trained for logistical control in the UNICEF component. Nor did the GRB provide promised office space in Cotonou when the Project moved into Bohicon quarters. This resulted in liaison and communication difficulties, which were resolved somewhat by provision of exceedingly limited space for the Project in UNICEF offices. But the USAID/PRAGMA side was not accommodated.

Despite all shortfalls, the Project has in fact met most objectives, and more than completed the required numbers of localities served.

4.2.4.6. Problem solving mechanisms

Certainly the role of the coordinator has proven both a management/planning node, and a mechanism for the resolution of problems. Another singularly useful and appropriate mechanism for readjusting the Project path has been the use of planning and remedial workshops. Thus, after the delayed and infelicitous beginning, the start-up workshop developed a sense of structure, plan, and desirable communication process for the multiple agencies to be involved in the Project. Equally, in the review workshop developed by WASH, May 17-21, 1988, problems encountered were discussed and working plans developed to surmount the difficulties. Among the problems addressed were: 1) how to handle the water quality analysis; 2) replanning to handle pump maintenance; 3) clarification of the roles of *médecins chefs*, technical assistance, national

supervisors, Peace Corps supervisors; 4) clarification on the plan for training and monitoring of supervisors, agents, and villagers; 5) viability of cisterns; and 6) amelioration of communication and coordination at all levels in the Project.

4.2.4.7 Monitoring and evaluation

Monitoring has been a weak point in this Project. As discussed earlier, a distant and burdened USAID/Lomé has often responded slowly to Project requirements. Distance and the need for two major donors to review and respond to Project activity from Washington and New York have made financial tracking excessively difficult. At the local level in Cotonou, the UNICEF program director has followed much more closely, and responded with interest to UNICEF team members' desire to enrich the water-supply component with community gardens and similar efforts.

Regular evaluations are the appropriate means, however, to assess Project realizations and correct deviation or shortfall. The mid-term evaluation marked the slow and problem-ridden start, but also the good progress and sound base the Project had achieved by February 1989. Further, the formal evaluation allowed all participants to view the headway made.

It has been difficult to set a final evaluation for this Project, which has now seen two extensions. This assessment, tasked only and specifically to review the effectiveness of interagency collaboration, coordination, and communication, **does not take the place of a full final evaluation to tally the score of Project accomplishments.**

4.2.5 Lessons learned

- Joint agency projects require the coordinated fielding of implementing teams. Where A.I.D. is the prime funding agency, its project design cycle should govern the timing of team deployment. In mounting joint agency projects, A.I.D. must act in awareness of the time demanded by

its required project development process. Because this can take the better part of a year, the agencies involved should design arrangements that will permit coordinated launching of joint project elements accordingly.

- Multiagency projects require greater specificity in joint planning. Careful documentation of participating agency roles, authorities, and responsibilities to avoid project management conflict is a prerequisite to which A.I.D., the Peace Corps, and UNICEF should give due attention.

- More realistic, sustained, and binding GRB planning is needed to ensure provision of promised personnel, activities, liaison, and supervision in integrating project activities into overall government programs.

- Where UNICEF participates in a joint project predominantly funded by USAID, the coordinating responsibility must be shared equally by both.

- To preserve the ability to mount and fund joint projects, it is essential that UNICEF ensure that all participating agencies receive due recognition and credit for their contributions.

- Peace Corps participation in a joint project requires it to be responsive to its partners' project development cycle, so as to avoid fielding volunteers prematurely. They should not be deployed before their jobs, logistics, and counterpart are defined, agreed upon, and in place.

- When a serendipitous development brings advantageous changes to a project or program, it is incumbent on sponsors to consolidate the changes. Guinea worm reduction was an indicator. It became an objective of the revised Rural Water and Sanitation Project. Project support to this newly developed objective should now

ensure an adequate epidemiological foundation. It is too late for a baseline study, but not for the introduction of an epidemiologically sound data collection and analysis system, consonant with Ministry of Health HIS planning.

4.3 Summary of Training Activities

4.3.1 Introduction

Training is inherent in most of the activities undertaken by the Project. Much of it has been in-service, on-the-job, or — in the case of villagers who are the projects primary beneficiaries — learning though participation. Limited training has been undertaken overseas and some in nearby third-country locations for limited durations. Numerous in-country workshops and seminars have been provided for village mobilization, health interventions, and some sanitation activities.

Most Project in-country training, both the preparation of Project personnel and training delivered by the Project staff, was designed to be experiential and learner-centered. This participation-orientated, collegial method provides the experiential learning approach used by the Project to allow participants to manage and share responsibility for their own learning.

Effective "experiential" training strategies allow participants to engage in an activity, review this experience critically, abstract useful insights from the analysis, and apply these results in future practical situations. This approach is based on the axiom that behavioral change occurs not primarily from access to information, nor even from attitudinal changes, but from repeated practice of the desired, modified behavior, combined with improvements in technical and organizational skills, which themselves are only acquired by doing.

This approach was deemed the optimal method for achieving the Project's purpose, because improvement in health practices and programs for facility maintenance require constant community and individual commitment and informed participation.

The approach was reinforced by the multidisciplinary nature of training at every Project level. While national and Project technical personnel were trained, the largest numbers who received training were at the district, village, and other local levels. Moreover, the cascading or "waterfall" system of training used by the Project, in which the trainees become the trainers of the next group, greatly helped assure training competence at all levels. This system required that all training plans contain a strong training-of-trainers component to prepare participants for their role as trainers of the next level.

4.3.2 Training activities by Project component

4.3.2.1 Training in the socio-health component

There are three levels of training activities within this component. First, at the district level, one multi-disciplinary team was formed and trained for each of the five districts covered by the component. Each district team was made up of one or two nurses, one or two hygiene agents, and one or two social affairs agents. The average total number of district team members over the life of the project is estimated at 26 (team numbers fluctuated over time because of reassignment of ministry personnel).

The district teams were trained by the Projects' multi-disciplinary technical supervisors in such areas as: general information about the USAID Water and Sanitation project, the role of a rural development agent, adult education theory and techniques, community mobilization and participation, and the role of women in development. This basic training was followed by specific and detailed training on the role and responsibility of village socio-health development committees and the steps necessary to create these committees.

Finally, these teams were provided with comprehensive technical training on various health themes, including Guinea Worm disease prevention, potable water, sanitary excreta disposal, family latrine construction, and personal and domestic hygiene. Needless to say planning and executing this successive series of training for the 26

or so district team members required a tremendous amount of time and effort by the Project technical team. (See section 4.4 of this report for further details.)

The second level of training activities within this component occurred at the village level. The district teams trained selected village socio-health development committee members: presidents, secretaries, treasures, pump caretakers and health workers. This training consisted of defining the role and responsibilities of the committee, basic organization and management skills, simple adult health education techniques, and technical training in the health themes mentioned above. Moreover, it was decided to create and train a village committee in each village and commune where a borehole was provided by the project, or previously provided by UNICEF and other donors in the project zone.

This resulted in the district teams either establishing, or reorganizing and subsequently training, approximately 459 such committees. Total membership in a typical committee varied between 6 and 11 individuals (excluding ex officio members and advisors). It has therefore been estimated that the district teams trained over 3,213 committee members on the roles and responsibilities of village committees. In addition, from among these 3,213 persons, it is estimated that more than 2,295 received additional technical training on the first three health themes (Guinea Worm, potable water, and sanitary excreta disposal) over the life of the project.

Table 1 gives a detailed breakdown of training sessions performed by the district teams in the various villages concerned. Note: the district teams were unable to complete all the training sessions planned around the technical themes of personal and domestic health because of time constraints.

The third and final level of training activities within this component again occurred at the village level. This time it was the village committee members trained by the district teams who, in turn, became trainers of their fellow villagers. In this way the village socio-health development committees came to serve as the organizing and executing agency of Project health education activities in villages, and as educators and trainers of fellow villagers.

While it is true that for several reasons this final outcome varied from village to village and from district to district (see section 4.4 for further details), it has been estimated by the Project that as many as 114,750 villagers benefited from Project-generated health education activities in the form of health talks and demonstrations — a significant accomplishment indeed!

Table 1
Summary of District Team Training Activities

District Name (No. of VSHDCs)	Training Theme and Number of Sessions					
	Roles & Respon-sibilities	Guinea Worm Reduction	Potable Water	Sanitary Excreta Disposal	Personal Hygiene	Domestic Hygiene
BANTE (79)	79	79	69	0		0
DASSA (124)	124	124	124	124	0	0
GLAZOU (112)	112	112	112	112	0	0
SAVALU (97)	97	97	97	97	40	0
SAVE (47)	47	47	47	37	0	0
TOTAL	**459**	**459**	**459**	**449**	**109**	**0**

4.3.2.2 Training in the latrine construction component

The latrine construction program was divided into two distinct phases: a first phase, devoted to the construction of school latrines; and a second, devoted to family or village latrine construction.

Training for the first phase began with the identification by each district team of two or three local masons to serve as district latrine construction coordinators and trainers. These individuals were generally well-qualified as masons, and indicated a readiness to work with the Project. A total of 13 such masons were eventually selected for training by the Project, together with all the district team sanitation agents (about six). The 19 or so were trained in the construction of two different school latrine models, each with two, three, or five holes. One was a simple low-cost design, and the second was a more costly "VIP" model. Practical skill training was conducted by Project technical assistants, who also prepared all didactic and other training materials in support of this program.

Once the basic skills had been demonstrated and mastered by trainees, the district teams returned to their districts for the next stage of this activity.

Approximately 100 schools had been identified by the Project for latrines. The next step in training was the selection of at least one experienced local mason from each of the participating villages. They received training in much the same fashion as the 13 district masons, only this time the district masons served as trainers of these 100 or so local masons under the supervision of the district sanitation agents.

Once again we see the cascading, or "waterfall" training approach employed. While local masons were trained, district sanitation agents and supervisors held informational sessions with all teachers from participating schools about proper latrine use and maintenance, and the expected counterpart contribution to the project. The teachers used this information with parents to arrange

for the necessary counterpart contribution in local materials and labor. Teachers then prepared sanitary health sessions for use in the schools. (See section 4.9 for further details regarding this component.)

The second phase of this activity concerned the village or family latrine construction subcomponent. Training for this phase began in the previous one, with the training of the 13 district masons. These same district masons and coordinators were again brought to Project headquarters for training on two types of family latrines. Again, one was a simple low-cost design, and the other a more costly VIP type. This time not only sanitation agents, but all members of the district teams were trained in this activity, because they would all later participate in related training activities at the village level.

Once this training was complete the district teams and district masons returned to their areas for the next round of training. Between five and eight latrines were allocated to 10 to 12 villages in each of the districts — almost 300 latrines in all. In each of these villages one or two other people were identified by the district masons, under the supervision of the district team, for training in the basic design and construction of these latrines. These individuals generally had some masonry experience but by no means were all of them so qualified. Additional individuals were tentatively identified to provide counterpart contributions to the project, mainly in the form of labor and local materials.

Parallel to this training in the villages, participating families and appropriate members of the village socio-health development committees received individualized training from the district teams about the use and maintenance of their latrines.

4.3.2.3 Training in the pump maintenance and repair component

The Project provided training in pump maintenance and repair to two groups of participants on two different levels. First a series of training sessions was held at the Project offices in Bohicon for local district pump mechanics and village pump caretakers. Because of

the large numbers of participants involved, the same training course was given to three separate groups successively. A total of 17 local district pump mechanics and hundreds of village pump caretakers participated.

The purpose of this first series of training sessions was to provide the basic knowledge and skills to participants for the proper care and maintenance of the India mark II pump being installed by the Project. This training was performed by the UNICEF-provided technical assistance team responsible for the borehole construction program, in consultation and cooperation with the provincial hydrological services department. This training was also greatly facilitated by the experience of the Project's multidisciplinary technical team in adult-education approaches and techniques suitable to the circumstances. Peace Corps pump maintenance and repair volunteers, responsible for the supervision of the local district pump repair mechanics, also participated in this training.

The second level of training in this area occurred in the villages at the time the boreholes were constructed and the pumps installed. This training was again provided by the UNICEF technical assistance team, with help from the Peace Corps volunteers. As the pumps were installed, the local district pump mechanics and the village pump caretaker were again trained in the proper care and maintenance of the new pumps, thereby reinforcing their earlier training received at project headquarters.

4.3.2.4 Training in the rural water production component

The Project provided two types of training within this component: formal training, both within and outside the country, and a much more extensive on-the-job training program in the Project zone.

Formal training included:

- The hydrogeologist and chief of party DH received technical training in new hydrologic technology in November-December 1987 at Cefigre-Sofia Antipolis (France). A second technical training in 1990 for this individual was canceled at the last minute when the CTPAG Training Center in Burkina Faso closed because of financial constraints.

- Over 200 hours of technical training in the operation, maintenance, and repair of Project drilling equipment was provided by the UNICEF drilling team to six mechanics of the DH and three from the Ministry of Health in August-September 1989.

- A drilling technician received field training in petrographic survey techniques by a consultant hired by the Project to do micro- and macrotectonic studies in May-June 1988.

- Technical training in pump operation, maintenance, and repair was also provided to 13 district pump repairmen and dozens of village pump caretakers through a series of seminars held at Project headquarters just before drilling operations began. These seminars were organized by UNICEF technical assistants in collaboration with the Project's technical team.

On-the-job training was extensive and continuous over the life of the Project. This training was organized and supervised by UNICEF technical assistants, and included all counterpart personnel. Training included: drilling equipment operation, maintenance, and repair; pump installation, operation, maintenance, and repair; and vehicle maintenance and repair.

It is satisfying to note that upon completion of the drilling program, the national counterpart personnel were fully capable of carrying out, under their own supervision, all hydrogeological surveys, drilling activities, and pump installation, maintenance, and repair.

4.3.2.5 Training in the water quality analysis component

Although no formal or on-the-job training was planned for this component, the methods adopted for water-quality analysis required the training of a rig technician and two Peace Corps pump-repair volunteers in the techniques of physico-chemical analysis, in October 1989. This training was provided by a USAID-funded consultant, and was also extended to a number of technicians from the DH, who were working outside the context of the Project.

4.3.2.6 Training in the epidemiological surveillance component

Once again, the training plans for this component were left largely undefined in the original project documents. Vague references were made to the need to develop a system of systematic data collection and analysis through the use of baseline village surveys. In summary, training in this component was sporadic and largely unplanned, and resulted more from "learning by doing" — with subsequent inadequacies — because of the necessity of obtaining basic information on which to plan future Project activities.

4.3.3 Other training with an impact on the Project

Two other groups of participants in Project activities received training directly related to Project implementation. The first was a group of Peace Corps volunteers who received language, cross-cultural, and technical training at the Peace Corps Regional Training Center in Pagula, Togo, in anticipation of their assignment to the Project. Two categories of volunteers were trained — health educators and pump-repair supervisors. Participation of 25 volunteers was planned, and 22 actually ended up participating in the Project, albeit for periods ranging from 1 to 36 months. Further details about their participation are found in sections 4.4 and 4.7 of this report.

The second group of people receiving Project-related training were those associated indirectly with the Project, but without direct links to it. These individuals included other health personnel, community development agents, and other interested parties from

the international community operating in the same sector or Project zone. This training was primarily informational in nature and focused on Project objectives, methods, and work schedules.

4.4 Socio-Health Component

4.4.1 Introduction

We now have a decade of accumulated experience with safe drinking-water and sanitation projects for rural populations. This experience teaches that the most effective approach to ensure potable water availability is to link installation of rural water supply systems with a strong community health- and user-education programs.

Worldwide examples show that neglect of community participation and education leads to neglect by communities of the systems provided for them. Massive resources are thus wasted with no discernible improvement in community well-being. But community participation and education have proven to be the most difficult components to conceptualize and execute. Therefore, they have been neglected frequently in favor of more concrete water-supply and sanitation interventions.

The Benin Rural Water and Sanitation Project was fortunate to have been developed at a time when lessons could be drawn from similar projects in Benin and other countries. The goal became to build a model of integrated technical and socio-health components with a greater likelihood of improving health and well-being in participating communities. Consequently, the socio-health component of this project — the program concerned with community participation and health- and user-education activities — is considered the pivotal aspect of the Project.

4.4.2 The Plan

4.4.2.1 Objectives

The socio-health component was a long-term educational activity to be carried out in all villages receiving a potable water supply through the Project. Its purpose was to help villagers improve their well-being by maximizing the health benefits to be expected from clean drinking water through health education and village sanitation.

The Project further intended to strengthen Beninese institutions responsible for this and similar programs by reinforcing national health and Water Decade policies and programs, and by providing technical and financial assistance for training personnel at all levels. To this end, because the need for convenient water sources in the Project zone was believed to be great, the socio-health program was used as the focal point and springboard for education and training activities.

In summary, the ultimate purpose of interventions by this component as stated in the official Project agreement, Amendment #2, is:

> "to inform the village population of the link between clean water, sanitation facilities, and health; advise them of the numerous essential behavioral changes needed to realize health benefits, and assist them in making these changes. It is expected that these interventions will make the village population sufficiently mobilized administratively, technically, and financially to assume (and to continue to assume) responsibility for maintenance and repair of water supply facilities and latrines, and in implementing other community development activities."

4.4.2.2 Method and approach

As previously discussed in section 4.3 of this report, a participation-orientated, collegial method was to be used in implementing the health interventions. Activities under this component went

beyond being a series of isolated intercessions, transfers of knowledge, or directives to take a prescribed course of action. To be of value for the Project, the combined health interventions had to constitute a continuous, cumulative, participatory learning process.

By engaging in this process, villagers began to acquire the means to define and rank problems, to identify and choose among alternative methods of problem resolution, and to gain access to knowledge, materials, and skills to implement a chosen method — without educators or others prescribing any particular method.

Implementation would require extensive multidisciplinary training at every Project level. Thus, an integrated training would involve a cascading, or "waterfall" system in which the trainees at one level became the trainers of the next group. To this end, the approach required that all activities undertaken contain a strong "training-of-trainers" element to prepare participants for their role as trainers of the next level.

In summary, this approach to community mobilization and participation using a multilevel training cascade provided the framework to train personnel for effective execution of village action and information campaigns.

4.4.2.3 Organization of the component

The Directorates of Health Education and Sanitary Engineering of the Ministry of Health and the division of Social Affairs of the Ministry of Labor and Social Affairs had joint responsibility for the execution of this component. The national directors of these divisions were to serve as technical advisors to the Project with responsibilities for reviewing and approving detailed implementation plans. They also held responsibility for broad program direction and coordination with the National Director of the Hydraulics Service, the project Senior Technical Advisor and Project Manager, and his counterpart, the National Project Coordinator.

At the provincial level (Zou province), the Provincial Directors of Public Health, Social Affairs, and Hydraulics were to serve as close technical advisors to the Project, and supervise their respective personnel assigned to it. They were also expected to review and approve all implementation plans.

At the project level (northern Zou province), lead responsibility for the organization and management of the socio-health component resided with the multidisciplinary supervisory operational and technical unit of the Project (hereafter referred to as the Project technical team). This team was made up of the former provincial chief of Health Education, a sanitation technician from the Division of Sanitary Engineering, and social affairs agent from the Division of Social Affairs. These individuals worked closely with the technical assistants provided by USAID/UNICEF, the public-health-education specialist, an environmental sanitarian, and a civil engineer with a strong sanitation background, under the supervision of the national coordinator and the USAID project manager.

At the district level, component activities were carried out by district implementation teams (hereafter referred to as district teams), composed of one or two nurses from local health centers, one or two social affairs agents from the Directorate of Social Affairs, and one or two rural sanitarians. Nurses and social-affairs agents worked part-time on the teams, while the sanitation technicians were assigned full-time to the Project. Overall supervision of the district teams was to assured by the district *médicin chef*, who was to be responsible for designating a state nurse to lead the teams in conjunction with Peace Corps health education and sanitation volunteers.

At the village level, component activities were to be carried out by the district teams, who would work directly with the VSHDCs chosen by the village and with village health workers, if any, and appropriate extension agents who might also be working with the villages. The villagers were to be trained by the Project for their role and responsibilities.

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**Village Committee, Project Team,
and Peace Corps Volunteers, Logozohe**

4.4.2.4 Flow and pace of activities

As mentioned in the introduction to this section of the report, activities of the socio-health component can be categorized into blocks of events referred to as "campaigns" and "sub-campaigns." What follows is a summary of the flow and pace of activities grouped into such categories.

4.4.2.4.1 Planning stage

This phase was to have begun with the preparation of a detailed implementation plan, which was to include measurable, observable objectives, steps and tasks required, clear assignment of responsibilities, a time frame, and a budget. Then technical documents and training materials would be prepared and thoroughly field-tested before actual use. Third, a training methodology and approach, based on the participatory and experiential adult-education model, would be planned using the cascading or "waterfall" system envisaged by the Project.

Next, the execution of campaign activities would be spelled out, describing the exact steps to be taken by district teams (e.g., number of proposed meetings with VSHDCs, and the content and process of health education sessions to be held). Finally, an approach and method for the systematic evaluation of activities at all levels was to be discussed and prepared.

4.4.2.4.2 Information and preparation campaign (pre-water resource development phase)

The plan calls for this phase to begin with the selection of the socio-health staff. The compositions of the Project technical team and of the district team have already been described above. What is of particular interest here is that the original Project plan specified that at no time during the Project should a district team member cover more than 10 villages, and that decisions to extend water-resource activities to new villages should be based on the availability of socio-health staff.

The next step was to be the discussion and eventual selection of socio-health criteria for village selection. Surveys necessary to this process were considered a first exercise for the newly created district teams. Next, the Project technical team would train the district teams for their roles as extension agents and trainers at the village level. Once training of the district teams was completed, agents were expected to make contact with the political and traditional authorities in each village assigned to them, to begin the process for inclusion of the village in the Project (e.g., explaining the Project and selection criteria).

For those villages selected for participation in the project, the final step under this phase was the creation of the VSHDCs themselves — determining their composition, roles and responsibilities of each member, and the village contribution to a pump maintenance fund.

4.4.2.4.3 Water and sanitation for health campaign (post-water-resource development phrase)

The groundwork for this phase of activities within the socio-health component should have been completed **as part of the first stage of the epidemiological surveillance component of the project.**

This second component should have developed a long-term epidemiological surveillance system and worked with the Project technical team in designing the baseline surveys to be done in all Project villages. At this point, then, the baseline surveys were scheduled to be carried out by the district teams in the villages assigned to them, with the help of the VSHDC members. The VSHDCs would then keep their surveys, which would later be used as a tool for identifying the villages' three or four priority health needs, to be carried out under the last phase of activities of the socio-health component.

The next step during this phase was the beginning of a series of trainings for district agents in training-of-trainers techniques and health themes, in preparation for their role as trainers for members of the VSHDCs. In the next series of steps planned

under this campaign, district agents would train VSHDC members, who in turn would train their fellow villagers. Special attention should be accorded during these operations to activities having a bearing on the control of Guinea worm disease, and the introduction of an experimental low-cost family latrine program.

4.4.2.4.4 Community health promotion campaign

The last phase of this component assumed that by this point the socio-health staff and VSHDCs would have experience and skills in community organization, health education, and preventive action. Thus armed, the VSHDCs should embark on a series of sub-campaigns: health problem solving, primary health-care strategies, training of village health workers, and oral rehydration therapy, all organized and carried out by the VSHDCs themselves, with technical guidance and assistance from the Project.

4.4.2.5 Planned collaboration, coordination, and communication mechanisms

Considerable time and thought went into the design of mechanisms for harmonizing the types and forms of working relationships, methods of coordination, and formal communication and reporting channels. These mechanisms would be used within the Project, among the Project and national authorities, Project beneficiaries at the district and village level, and with other donors and players in this sector. A detailed description of these mechanisms is found in WASH field reports nos. 207 (April 1987) and 241 (June 1988), and need not be repeated here.

These planned mechanisms, more than anything else, may be responsible for the apparent remarkable success of activities in this and other components of the Project. A review of just how important and effective these mechanisms were is presented below.

In summary, the national project coordinator is responsible for the efficient organization and management of the collaboration, coordination, and communication mechanisms. He should give specific directions to assure that the rural socio-health interventions

precede installation of facilities (wells and latrines), and that selection of villages for Project participation is made objectively and fairly, on the grounds set forth in the village selection criteria. He should also ensure that component activities at higher levels support those at successively lower levels in a timely manner, that component personnel satisfy reporting requirements on schedule, and that reporting requirements are structured to assure sufficient feedback from the district and village levels to permit effective project monitoring.

4.4.3 Plan implementation review and assessment

4.4.3.1 Objectives

The planned objectives for this component appear to be overambitious, despite the impressive rate at which this component advanced. As discussed in Chapter 5 of this report, the achievement of certain objectives sometimes requires inordinate amounts of time, cooperation, and communication among participants, which are not fully appreciated and accounted for within the Project's time frame. This is certainly the case here.

It appears, therefore, that significant modifications should have been made to these objectives to make them more realistic and to reflect the increased importance placed on Guinea worm activities within the framework of this component. Under Amendment #3 to the Project, Guinea worm reduction efforts were upgraded from a target to a separate objective at the overall Project level, and the subsequent component objectives, including those of this component, were modified accordingly.

One lesson learned from this experience might be that the observed increase in importance in Guinea worm eradication efforts might have been anticipated in 1985 when the Project was redesigned, so that this component's objectives could have been appropriately modified at that time. In the final analysis, the question of whether or not this lesson was learned earlier or later would appear to be of little importance, given the limited lifetime of the Project.

4.4.3.2 Method and approach

While the time needed to achieve this component's objectives was seriously underestimated, the planned methods appear well-suited to the purpose. The collegial, multidisciplinary, integrated approach; the multitiered, cascading training system with strong training-of-trainers techniques; and the strong emphasis on community mobilization and participation all combined to make this an extremely innovative and successful experience for all parties concerned. Indeed, the lesson learned here is that this model has proven its value and should serve well as an example of how to approach integrated rural development activities in Benin in the future.

4.4.3.3 Structure

The structure of this component appears generally to have worked well at the Project and implementation levels (i.e., at the level of the districts and villages). The biggest problem encountered occurred in this regard at the national level. It was observed that the national technical directors never really fulfilled their roles as "technical advisors" and neglected their responsibilities for reviewing and approving project implementation plans. In short, they never really formed a bona fide integrated Project management and monitoring team.

There are many explanations for this. Government offices have borne the brunt of recent political and financial crisis. Moreover, ministries are over-centralized and yet undertrained in skills for identifying different sectors' needs and developing sector policy and strategy. Repeated changes in personnel have resulted in poor continuity in program development and evaluation. Finally, weaknesses in the provincial management system have resulted in poor supervision and inadequate flow of information to and from the periphery.

Provincial directors of public health, social affairs, and hydraulics and the sanitary technicians were in large part left out of the administrative, managerial, and technical loops, despite their

planned involvement in the Project. As with the national constraints described above, individuals at the provincial level were just not in a position to effectively participate in the Project.

Before turning to lessons learned, there is one important point to make about the structure at the district level. As mentioned above the overall structure worked well at this level — with one exception. The district project supervisors for the government (*médecin chefs*) were never directed to designate a state nurse to lead the district teams together with Peace Corps health-education volunteers. Peace Corps volunteers were never told initially — but only well after their training was completed — that they would be district team supervisors.

There was confusion at first, and then consternation, when the *médecin chefs* realized they were being asked to supervise a program, in addition to their regular work load, without the necessary time and means to do so. Peace Corps volunteers also resisted their "promotion" to fill this gap. The problem was later temporarily solved in the course of a WASH-sponsored workshop, during which roles and responsibilities were redefined among all parties concerned. The médecins chefs were provided with transportation to undertake their tasks as supervisors, while the Peace Corps volunteers were trained for their new administrative responsibilities as "supervisory aides." In addition, each district team designated one member to serve as counterpart to the Peace Corps volunteer whom he would replace, once Peace Corps participation in this component of the project was phased out.

By the end of the Project the problem had sorted itself out. *Médecins chefs* were well-versed in their roles as supervisors and used the Project-supplied transport to perform regular monitoring visits in the field. The designated district team members, trained by their Peace Corps counterparts, had officially assumed their new roles as supervisory aides.

The lesson is that it is well and good to design on paper, a management and supervisory structure that is basically sound, internally consistent, and full of checks and balances. But if this structure does not take into account institutional constraints, not

always evident, and the all-important human elements such as personalities, education, feelings and attitudes, then what looks good on paper may work out badly in reality despite the best intentions. This is not the first or the last project to suffer in this way. In all likelihood, Project designers in the future will still be looking for ways to resolve these problems.

4.4.3.4 Pace and flow of activities

The logical flow of activities appears to have been well-conceived and articulated in the plan for this component's activities. The pace, on the other hand, posed serious problems. The objectives of this component were very ambitious. Delays and confusion surrounded the start of the Project. The preparation stage of this component necessitated large amounts of time and effort to coordinate with other Project components.

There was a major breakdown in interagency coordination, from the start, with the early arrival of the Peace Corps health-education volunteers in late 1986. These volunteers were recruited on the basis of very preliminary discussions with the Government and the Project. They arrived for training without a clearly defined job description, and served more than one year without any job to speak of. This led to general demoralization of volunteers and a very high early termination rate. While some of the responsibility for this state of affairs rested with the Government and the Project, primary responsibility rested squarely with the Peace Corps itself. Both at the level of Washington and Cotonou, the Peace Corps appears not to have followed basic programming and training policies and procedures.

Not surprisingly, these circumstances led to a situation where key project activities "fell through the cracks." The non-performance of the KAP and village baseline surveys are good examples.

At Dassa Zoumé

Solar Pump For Lying-In Clinic (Maternité)

Nonetheless, most of the key component implementation activities proceeded at an impressive rate, and by the end of the Project a tremendous amount of work had been successfully completed.

Just as obvious, however, are gaps in Project implementation, and the fact that this component still has a great number of planned activities not yet completed. For example, two health themes planned under the Water and Sanitation for Health campaign are largely left undone. No activity at all has taken place under the final phase of the component (the so-called Community Health Promotion campaign).

It is hard to avoid the conclusion that the Project ran out of time. Moreover, it is the view of this assessment team that even if there had not been delays, confusion, and institutional and other constraints, and even if everything had run smoothly from start to finish, there still would not have been sufficient time to fulfill this component's objectives. Changing basic behavior that is deeply rooted in long-standing cultural belief and social practice is a very long-term process.

The lesson here is that such changes take longer than outsiders, with different perceptions, attitudes, and behaviors of their own, would realize.

4.4.3.5 Collaboration, coordination, and communication mechanisms

The fact that so much was accomplished by this component, given the constraints mentioned above, is due in large part to the remarkable degree of collaboration, coordination, and communication at the Project level. All participants displayed a high degree of professionalism and developed smooth and harmonious working relationships.

These same mechanisms appear to have operated just as effectively between this component and its principal beneficiaries at the district and village level. Again the collegial, integrated approach appears to have proven itself as an extremely effective way of undertaking multiple tasks simultaneously at different levels of

execution. The cascading, participatory approach to training, defined as central to the implementation of project activities, also appears to have met with unqualified success.

What lessons do we conclude from all this? Experience in this component confirms that, for activities that involve multiple levels of implementation and affect a variety of different beneficiaries, an integrated approach to planning and implementation is essential. This is a basic premise. An integrated approach dictates the nature and organization of the working relationships that will ensue.

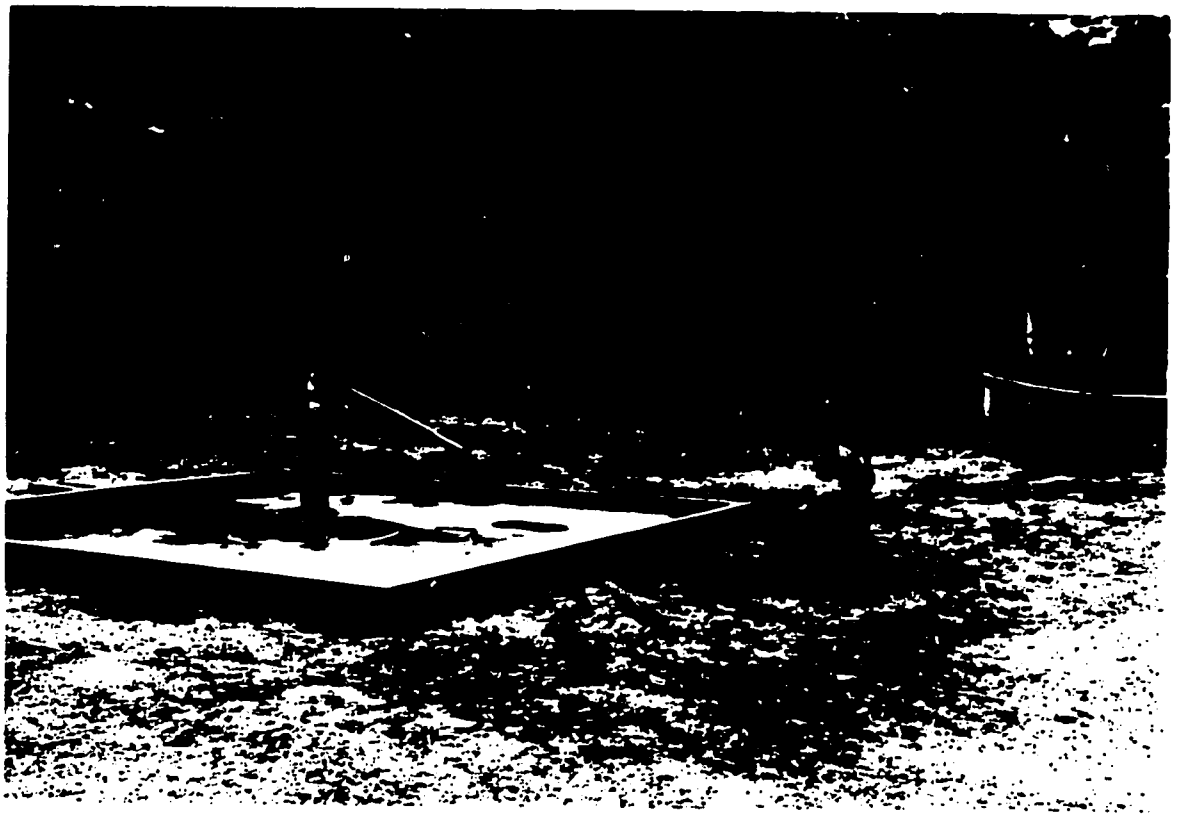
Finally, as was true for other components, these same associative mechanisms appear to have worked less effectively between the Project and national authorities. For reasons delineated above, while the flow of information to the authorities was regular and uniform, very little policy guidance or advice was received. When problems did arise, the Project Manager and his counterpart, the national coordinator, intervened with authorities for the resolution of these issues. The lesson here is that such a passive approach to collaboration and coordination on the part of national-level authority has worked sufficiently well on an ad hoc basis, but the approach will need to become more active if there is to be a true build-up of national capacity for the government to manage its own development in this sector in the future.

4.5 Rural Water-Production Program: Drilling and Pump Installation

4.5.1 Overview of borehole construction plan

4.5.1.1 Objective

The objective of the borehole construction program, as planned in the 1985 Project design, was to provide reliable, permanent, clean water sources for participating villages. This, of course, was based on the assumption that suitable hydrogeological conditions would prevail near villages selected for project participation. The goal was to provide, in all, 225 positive wells.



Pump linked with Community Garden to Support Maintenance By Selling Produce

4.5.1.2 Institutional setting

The Cooperative Agreement signed between A.I.D. and UNICEF gave UNICEF full responsibility for drilling and pump installation activities of the joint Project.

A.I.D. grant funding was to provide for recruitment of technical assistance personnel to form the UNICEF Team, for one drill rig, drilling costs, an expandable drilling supply, pumps and pump installation costs, and Project vehicles.

UNICEF was to contribute vehicles for its own personnel and maintain them, and pay overhead costs of the Cotonou office. UNICEF was to follow its own procurement and audit procedures.

UNICEF/Cotonou would supervise the UNICEF technical assistance team and activities. The USAID Project was to be managed and implemented by the contract team fielded by PRAGMA, and monitored and supervised by USAID/Lomé in Togo. REDSO/WCA in Abidjan would provide technical support.

Overall Project management was the province of the national coordinator, working with his counterpart, the USAID/PRAGMA senior technical advisor.

UNDP was to contribute used drilling equipment (two drill rigs) and pay for their insurance.

The Government of Benin was to provide and support personnel and services from four ministries, their interventions to be coordinated by a national project coordinator. The coordinator was to be chosen with USAID/UNICEF approval. The GRB was to be responsible for salaries of its personnel.

For the borehole construction program, the GRB was responsible for ensuring that qualified individuals were selected for on-the-job training and for daily collaborative work with the UNICEF drilling team.

As the agency responsible for the Project water-production component, and recipient of the grant, UNICEF would submit quarterly and annual financial reports of expenditures, and a progress report to USAID. Copies of the quarterly progress report were to be sent to the project coordinator, the project manager, USAID/Lomé, UNICEF/New York, and the Ivory Coast Regional Office. Quarterly and annual financial reports sent to UNICEF/New York Comptroller Division would be transmitted to A.I.D./Washington.

4.5.1.3 Organization

4.5.1.3.1 Human resources

GRB

The Project coordinator was responsible for liaison between disciplines and administrative levels, and for guidance in project management and implementation. The Directorate of Hydraulics (DH) of the Ministry of Equipment and Transport held primary responsibility for well-drilling and pump installation. The DH was to provide:

one hydrogeologist to serve as national chief of party for the borehole construction program; one geophysicists; two technicians in hydrogeology; and two drillers;

one pump installation specialist; one technician specialized in pump maintenance; and one mason;

five mechanics; two drivers; and

one draftsman; two storekeepers; and 15 workers.

UNICEF

UNICEF, under the Cooperative Agreement with USAID, would provide the services of:

- One hydrogeologist to serve as chief of party for the UNICEF drilling team and as counterpart for the national drilling team chief of party. His responsibility was to organize, execute and supervise activities of the borehole construction program, providing training for national personnel involved in the program.

  It was incumbent upon him, in collaboration with GRB personnel, to develop the subsequent five-year Water Program Plan.

- One master driller who would be responsible for conducting drilling activities, assisting national drilling technicians, supervising their work, and providing on-the-job training.

- One chief mechanic to be in charge of overall maintenance for drilling rigs, and all UNICEF project vehicles. His responsibilities included general technology transfer in the field of mechanics and the training of national mechanics.

- One geologist to execute hydrogeological and geophysical studies and monitor drilling activities.

The four-person drilling team recruited by UNICEF and the DH personnel were to be based in the provincial center and perform their work in participating villages.

Because of GRB financial problems, it later became necessary for UNICEF to pay operating costs, including fuel and per diem for personnel hired on a temporary basis by the Hydraulics Service.

4.5.1.3.2 Borehole construction activities organization

Step 1 was the selection of villages according to water needs, size of population, distance to the nearest water point, and prevalence of Guinea worm disease.

In step 2, socio-health district teams would help organize village committees in selected villages, creating a CFA 60,000 fund for pump maintenance to be deposited in a bank account. Each village would then sign a contract with the Project.

In step 3, first training would be given to village committee officers on their roles and responsibilities.

In step 4, the Project hydrogeologist and village committee would select a site, with the support of photo-interpretation.

In step 5, the Project drilling team would drill the well.

Step 6 would consist of construction of aprons by the Project, with some village in-kind input.

In Step 7, a pump was installed.

In Step 8, a pump was tested.

Step 9 was the water-quality analysis.

Further village mobilization and health education would follow these steps.

4.5.1.3.3 Planned activities and expected output

- Expendable drilling supplies and other material ordered by USAID/ REDSO/WCA would arrive in August-September 1986.

- UNICEF recruitment of technical assistance would be completed by November 1986.

- o UNDP drilling rigs would be reconditioned by December 1986.
- o All personnel would be in place by December 1986.
- o Socio-health district team intervention would begin in January 1987.
- o Drilling activities and pump installations would start by February 1987.
- o USAID drilling rig was to arrive in April 1987.
- o One hundred wells would be completed and equipped with pumps by December 1987.
- o Two hundred wells would be completed and equipped with pumps by December 1988.
- o All 225 wells programmed would be completed and equipped with pumps by March 1989 at the latest; this would complete the drilling and pump installation program.

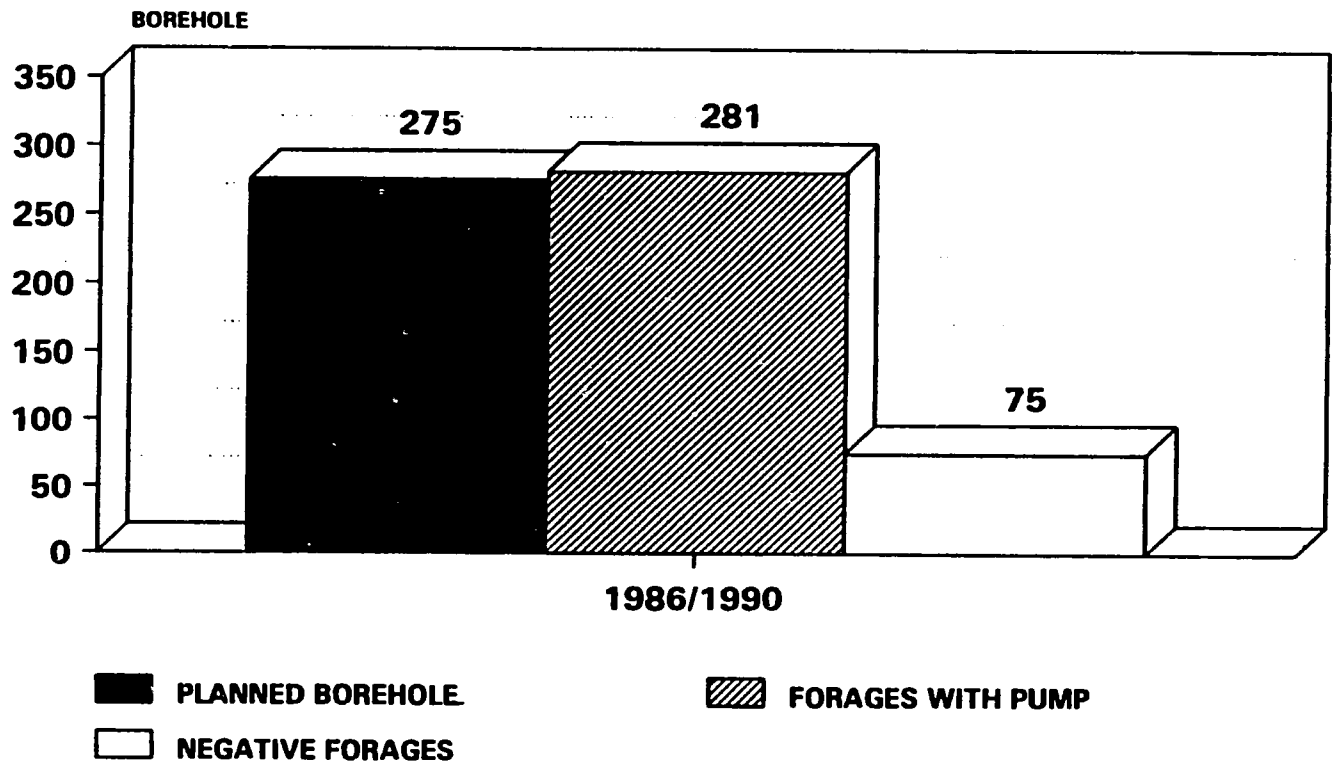
UNICEF also was held responsible for on-the-job training of national staff in the following areas: water project management, work planning, hydrogeology, geophysics, pump-testing, installation and repair of handpumps, drilling techniques, and mechanics.

4.5.2 Review of implementation

4.5.2.1 Borehole construction and handpump installation

The Cooperative Agreement was signed March 12, 1986, by UNICEF, and the grant was made available the same month. However, from March 1986 to February 1988, drilling activities could not be implemented because certain prior requirements had not been completed:

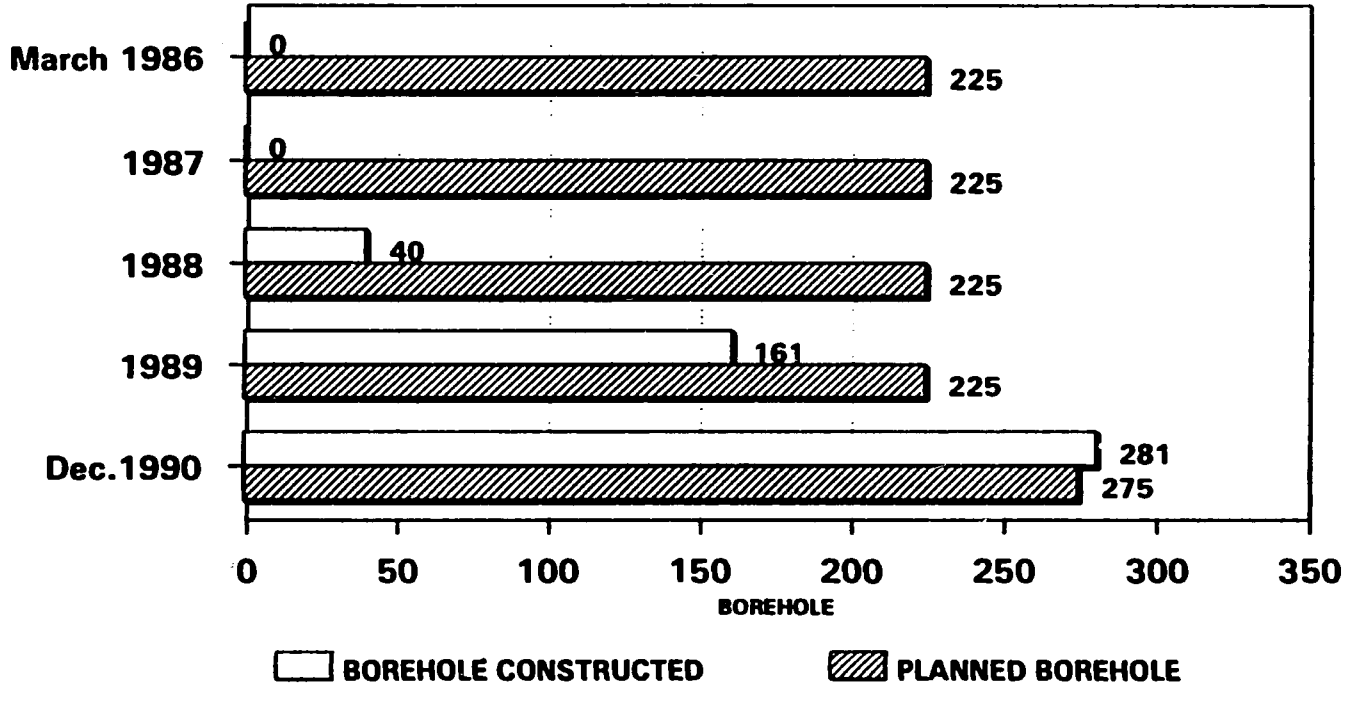
BENIN RURAL WATER SUPLLY PROJECT
GRPB/USAID/UNICEF
PROJECT PERFORMANCE/BOREHOLE EXECUTION



BENIN RURAL WATER SUPLLY PROJECT

GRPB/USAID/UNICEF

BOREHOLE CONSTRUCTION EVOLUTION

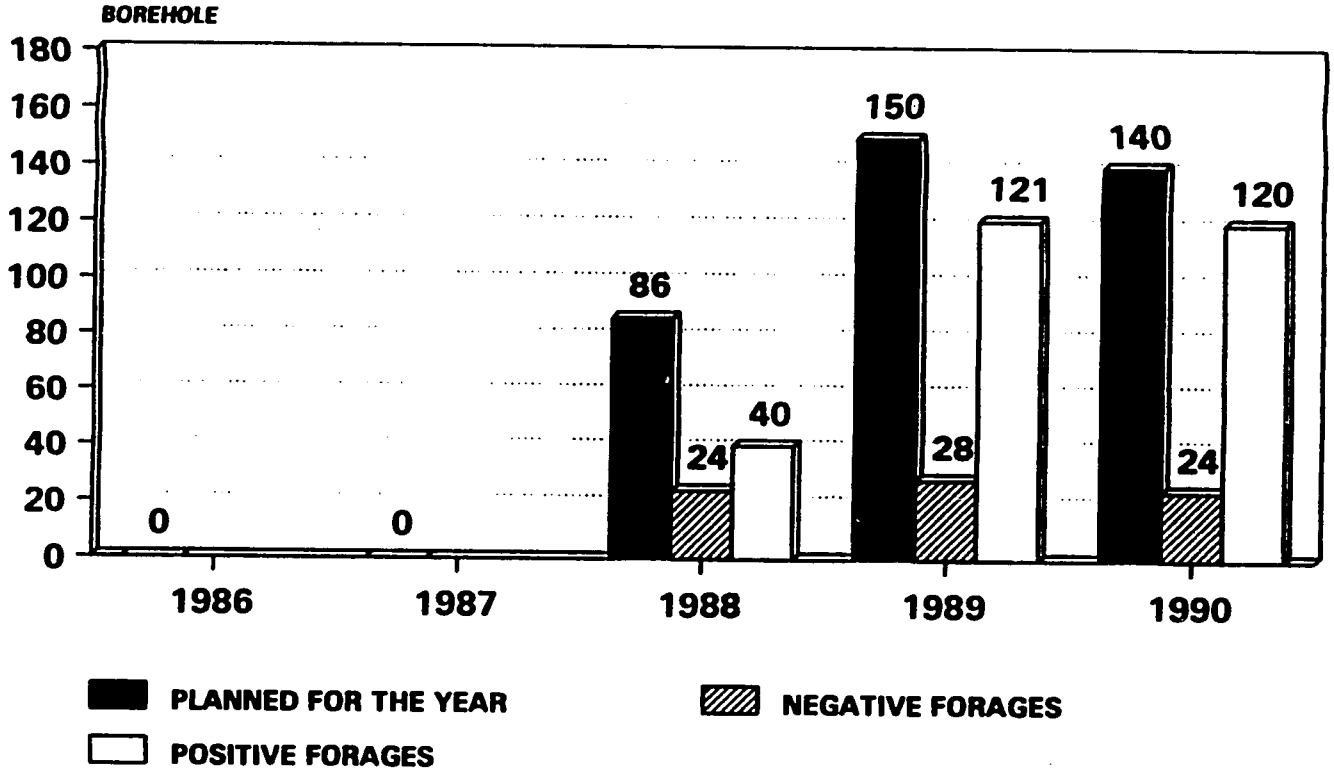


In 1986 the project was expected to completed 225 boreholes by 1990.
March 90 projected output modified: 275

BENIN RURAL WATER SUPLLY PROJECT

GRPB/USAID/UNICEF

BOREHOLE CONSTRUCTION EVOLUTION



- o Village selections could be determined only after surveys of water and health needs in the Project zone.

- o Community mobilization and organization (establishing a village committee and village fund, beginning health education, and signing a contract) had to precede provision of the water point.

The long delay is described in other sections of this report. During the period when UNICEF's mechanic, master driller, and project manager were in place but other Project components were not available, the UNICEF water team undertook activities in other UNICEF projects. Recruitment of final members of the UNICEF technical assistance team, or their reassignment to the GRPB/USAID/UNICEF Project, took place only between September 1987 and January 1988, to avoid the high cost of non-productive technical assistance.

However, other activities such as the reconditioning of equipment, planning meetings with the DH and USAID, the start-up planning workshop, and the ordering of spare parts for pumps and rigs took place in 1986 and 1987. In 1987, in view of the delays, the project expiration date was rescheduled to December 1990.

At a December 10, 1987, meeting between USAID, the project coordinator, and UNICEF, the start of drilling activities was scheduled for February 15, 1988, and a plan of action for 1988 was elaborated by DH and UNICEF.

Drilling began on February 16, 1988. During the first year the rate of borehole construction was slow, and only 40 of the planned 90 boreholes equipped with hand pumps were completed. During that period only one drilling team implemented activities.

During the 1989 campaign, 121 boreholes were drilled. The speed of drilling production increased with the arrival in February 1989 of the new drilling rig ordered by USAID. Two drilling teams were put to work, and the third drilling rig was used as back-up.

Pump testing did not start until April 1989 because the engine previously received from France was not the right size for the pumps used in the Project, but by December 1989 the pump testing team was able to catch up with the drilling pace. However, the lack of pump-installation personnel made it difficult for the team to follow the pace of the drilling team. In 1990 two drilling teams were operational for the campaigns.

An amendment to the project in March 1990 increased the targeted number of productive wells from 225 to 275. During 1990, 120 positive boreholes were drilled. The objective of the drilling program was therefore completed by December 1990, with the execution of a total of 281 positive wells.

Some clarification remains to be made, however, because 25 of those wells have been attributed by the Directorate of Hydraulics to the World Bank/CARDER project. Indeed 25 wells were to be executed in the project zone by CARDER, with funding from the World Bank. But the wells now ascribed to World Bank production were in fact executed by the GRPB/USAID/UNICEF Project, with USAID Project funds and inputs and a minimal contribution by the DH. These wells must be appropriately attributed to the USAID Project, unless the DH determines to pay their costs from funds received from World Bank, refunding the charges paid by the AID Project. The matter is now under investigation in the DH.

In 1991 an amendment to the UNICEF grant increased by $106,000 the original funding for UNICEF drilling activities, and extended the program completion date to June 30, 1991. With the addition of some UNICEF funding, 28 positive boreholes have been executed between January and June 30, 1991, putting the total of wells constructed under the USAID/UNICEF cooperative agreement at 309.[9]

[9]Counting positive and negative boreholes

During all the drilling campaigns, geophysical techniques have been used on only five occasions. The technique most often employed has been photo-interpretation, backed up by geomorphic survey. In Project planning, according to the experience of other projects in Benin and neighboring countries, the rate of drilling success was estimated at 49-50 percent. In the actual Project the rate of success, or positive wells produced reached 86 percent. This success is to be attributed to the experience of the well-seasoned national drilling team chief, who had worked in projects executed with UNICEF and other agencies before, and to the high competence of the technical assistance team.

4.5.2.1.1 Major constraints encountered

- o DH personnel assigned to the Project but residing elsewhere accounted for time lost. At first the campaign averaged only 18 working days per month.

- o Personnel expected to be assigned by the DH were not available. This resulted in delays in pump installations and equipment maintenance.

- o Delays in pump delivery affected pump installations.

- o The engine of one drilling rig did not meet the ordered specifications. This resulted in long delays for repairs because no spare parts were available.

- o Pump testing did not start until April 1989 because the engine received did not conform to the type of pump.

- o Villages were delayed in raising funds for pump maintenance.

- o The apron-construction team and the pump-installation team had difficulty following the rate of drilling because of the shortfall in technicians assigned by DH.

- o The first year of the drilling campaign was slow because of a lack of available pumps.

In the case of such multi-sectoral and multi-institutional programs, design teams must ask whether private or public enterprises are the better vehicle to accomplish the program. There is a question as to whether a private company can or should sustain the delays we have seen here, caused largely by different institutional procedural time.

4.5.2.2 Training

A summary of training activities within the context of this component is provided in Section 4.3. Generally, training activities took place mostly on the job, through exchanges between technical assistants and their counterparts. By the end of 1989, the DH recommended that more responsibility be left to the national staff, while the technical assistants should now assume a supervisory task. At that time, the UNICEF hydrogeologist was assigned as counterpart to the chief of the technical service at the DH.

4.5.2.2.1 Lesson learned

The building of institutional capacity and the transfer of technology is best achieved through the collaboration and cooperation that occurs when experienced professionals learn to work together as a team.

4.5.2.3 Organization

The organization and planning of major activities were undertaken jointly by the UNICEF hydogeologist, the national coordinator, and the DH chief of party according to the participating villages' lists submitted by the socio-health team. Execution was the responsibility of the DH technical personnel assigned to the project. Sites were selected jointly by the drilling crew and the village committee. The execution of the borehole and pump installation program was performed as planned, though not always at the expected pace, by the different teams in relation to their specialties.

Synchronization of activities, a key factor for effective execution of the program, was one of the major constraints at the beginning and until the last quarter of 1989. Other serious factors were the lack of communication between the different Project components, and the slow start-up of the process of identifying and mobilizing participating villages.

But the major obstacle was the non-compliance of the DH, which did not assign to the Project all the necessary personnel required in the Project Agreement. The fact that for a long time the drilling crew did not reside in the project area was an additional cause of delays in the rate of execution. At some point, personnel assigned to the Project — particularly pump installation technicians — were assigned to another project, greatly influencing the rate of pump installation (which was already going at a slower pace than the drilling of wells). There was also a lack of planning in the process of ordering and delivering material and equipment needed for pump testing and water-quality analysis.

The WASH workshop held in May 1988 was helpful in the process of seeking solutions, and promoted harmony among Project components. As long as they continued, meetings of the Comité de Suivi, composed of representatives of all institutions involved in the Project, proved to be a good channel of communication. At Project quarterly meetings, activities were planned for the next quarter and reviewed for the last quarter, and this provided an opportunity for each Project component to be aware of the activities of the other components.

Inclusion of the village pump repairmen in the process of pump installation was an ingenious solution, because it not only helped achieve not only the pump installation process, but also provided an appropriate way to reinforce their technical capacity as pump mechanics through a better and constant manipulation of all the pump components.

4.5.2.3.1 Lessons learned

The lesson here is that good planning alone is not sufficient: Frequent meetings and good communication are the keys to improving performance and increasing the rate of success. Host-country participation is a requisite.

4.5.2.4 Coordination, collaboration, and communication mechanisms

Collaboration, communication, and coordination, the triple (CCC) approach, was a determinant in implementation of the water-supply component of this integrated water and sanitation project. Overall coordination in this sector was assumed jointly by the national coordinator, the UNICEF chief of party, and the DH chief of project. Having the same background and the motivation to succeed were important assets to communication and collaboration among them. The organization of field meetings was an approach to problem solving, but after 1988, once the project was fully launched, those meetings were discontinued. UNICEF team members assumed the responsibility for everyday supervision in their fields of competence, and submitted monthly progress reports and quarterly plans of operation to their chief of party. The latter, in turn, had the responsibility to prepare the consolidated quarterly progress report, copies of which were distributed to other members of the Project coordination committee (PRAGMA and the national coordinator).

Collaboration among the staff assigned to borehole construction seems to have prevailed. Because the execution of the boreholes required different technical skills, good collaboration was essential, since one technician complemented another. The major constraint encountered during the Project was a lack of synchronization of subsequent activities, mainly between drilling, pump installation, and pump testing. However, that weakness was generated from outside the Project staff.

In the early stages of Project execution, some administrative problems affected not only the rate of project execution, but also the relation between UNICEF and the Hydraulics Directorate. The

DH refused to have its personnel based in the Project area as long as the Bohicon Project headquarters was not built. But the nomination of a new DH director at the end of 1988 improved relations between the two institutions.

During the life of the Project, the annual action plan was prepared by the project chief of party, the national coordinator, and the chief of the DH technical services, and a copy was sent to UNICEF/Cotonou. That close planning process reinforced the relationship between UNICEF and the DH, facilitating the collaborative process. Information about the project was transmitted through the quarterly progress reports prepared by the UNICEF chief of party.[10] Quarterly meetings of the Project coordination committee were held for programming of activities and follow up.[11]

The borehole construction program used the participatory approach, and in most cases received good support from the villages. Village participation in site selection was an essential component to assure future use of the water provided. In most cases the boreholes were executed at an average of no more than 400-500 meters' distance from the village, and in a few cases further than that. But in no case were water points provided at more than 800 meters.

At the beginning of the Project it often took time to create the village funds, a prerequisite to drilling implementation. But once Project achievements were seen in the region, the process became less difficult. In small villages unable to put aside the full amount, exceptions were made if villagers could at least create a fund of CFA 35,000. One unexpected outcome of that participatory approach was the creation of a demand from some villagers for assistance in creating community gardens around the water points to generate funds for pump maintenance.

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[10]Projet GRPB/USAID/UNICEF, Hydraulique villageoise et assainissement du milieu, rapport periodique #1-16.

[11]Projet eaux et assainissements en milieu rural, rapports d'activités 1 a 12.

The Project had maintained close collaboration and coordination with other agencies and other projects, particularly with the Benino-Suisse Project intervening in the district of Ouesse. Despite the difference in their community approaches, they have benefited from each other's presence. The Benino-Suisse were organizing villages in Ouesse District before the GRPB/USAID/UNICEF Project came to work in northern Zou.

Communication between the UNICEF and USAID partners in the Project has occurred not only through quarterly and annual progress reports and the annual financial reports, but in the every-day activities of Project execution. The Project has also benefited from the constant support of the U.S. Ambassador. The USAID/Lomé representative made several field visits, as did the UNICEF regional director, the UNICEF/Benin representative, and the UNICEF executive director and staff members from New York.

4.6 Water Quality Analysis

4.6.1 Overview of water analysis component plan

4.6.1.1 Objective

The specific objective of the water-quality analysis as planned in the 1985 Project design was to ascertain the quality of the water furnished to the rural population in Zou Province. Both physico-chemical analysis, to estimate the content of dissolved solids in the water, and bacteriological analysis, to determine coliform presence in any equipped wells, were to be executed by the Project. Other water sources were to be examined as well, if necessary.

In this manner, any well contamination would be identified as soon as possible and remedial measures could be taken to correct the situation.

4.6.1.2 Institutional setting

The Project document stipulated that water analyses were to be performed by the Directorate of Food and Applied Nutrition of the Ministry of Rural Development. USAID would fund expendable testing materials and equipment, and transportation and per-diem cost of personnel from the laboratory to collect samples.

4.6.1.3 Methodology and organization

Water samples were to be collected in the villages and brought to an appropriate laboratory for both physico-chemical and bacteriological analysis. It was anticipated that testing would be performed by CARDER,[12] soon after the wells were brought into production. Bacteriological testing, using the Millipore Reprocess Water Quality Control, would normally be restricted primarily to examination for total and fecal coliforms, but if necessary other parameters could be determined. Physico-chemical analysis was necessary to determine the pH of the water and other parameters for water corrosion mapping.

4.6.1.4 Planned activities and expected output

The number of tests in the Project's logical framework was estimated at 1,500. That estimate was based on the number of wells to be developed by the project, with sufficient margin for subsequent testing as appropriate, and for testing other possible contaminated water sources not produced by the Project. Testing was to take place as soon as the well was developed.

4.6.2 Plan implementation review

4.6.2.1 Organization

In the course of Project implementation, the organization of the water-quality analysis was modified. Participants agreed that in the field and the different institutions intervening in the Project, the

[12]Ministry of Development

physico-chemical basic analysis would be conducted by a rig technician and Peace Corps volunteers once the pump testing by the UNICEF/DH drill team was completed. Portable test kits were provided by USAID/PRAGMA. Results of the tests were communicated to the hydrogeologist for decision.

The bacteriological tests were conducted by a three member team from the Directorate of Bio-Medical Analysis Laboratory (DILABM) of the Ministry of Health. Most material and equipment were provided by USAID. The bacteriological testing was also organized by campaign. The team coming from Cotonou stayed in Abomey for the campaign duration. Every day team members went to the field to collect samples, which were subsequently analyzed at the Abomey hospital laboratory.

4.6.2.2 Physico-chemical analysis

Drilling and pump installation started in February 1988; however, the water-quality analysis planned to take place as the pump testing proceeded did not start until June 13, 1989, because the physico-chemical analysis kit order of 1988 did not arrive until June 5, 1989.

Once begun, physico-chemical analysis on all wells was conducted systematically along with pump testing, until the last quarter of 1990. In the Project area it was decided by that time that physico-chemical analysis was no longer required, because a water corrosion map had been established in light of previous sampling.

4.6.2.3 Bacteriological analysis

The bacteriological analysis, which had been scheduled to take place simultaneously with the pump test and the physico-chemical analysis, was carried out separately. Material and equipment were not received until June 1989. The first campaign, which collected 95 samples, took place in November-December 1989 in the Savalou and Bante districts. The second campaign, covering 130 wells, was conducted in March 1990 in the districts of Glazoue, Dassa, Bante, and Savalou. During these campaigns a total of 225 forages, new and old, were analyzed.

In July 1990, the methodology and process used for the bacteriological analysis was evaluated by a PRAGMA consultant. The consultant evaluation questioned results of the GRB testing and proposed the use of other test methods, making recommendations for improving the sample-collection and analysis process.

A third campaign was conducted in October 1990 on 118 Project sites. For that campaign, the recommendations of the consultant were taken into account. Since that campaign, no further bacteriological analysis has been performed.

There is a discrepancy: Records from the DILABM chief of party indicate a total of 343 bacteriological analyses conducted for the Project, while the Project progress report of March 1991 mentioned 555 analyses. If one includes the 78 samples collected by the consultant, the total number of samples would be 421.

A total of 22 boreholes were found contaminated and were treated with chlorine. A campaign called "clean village" was started during the first quarter of 1991 in five districts.

4.6.2.4 Training

A summary of training activities within this component is provided in Section 4.3. Briefly, although no formal training was planned, the new approach used for the water-quality analysis resulted in a need to train rig technicians and two Peace Corps volunteers in physico-chemical analysis. This was done in October 1989 by the UNICEF geologist.

During his stay, the PRAGMA consultant initiated the DILABM technicians to the new approaches in bacteriological analysis, and a technician from the Directorate of Hydraulics received brief training in physico-chemical analysis.

Training the Peace Corps volunteers is a short-term solution since it does not help build local capacity, unless the volunteers themselves become trainers of national technicians. All rig technicians should be trained in basic physico-chemical analysis and equipped with transportable kits.

4.6.2.5 Coordination, collaboration, and communication mechanisms

Lack of coordination was the major cause for the late ordering of needed material and equipment and for the subsequent delays in delivery. However, the drilling team, with Peace Corps assistance, was able to overcome the time lost.

The drillimg team's collaborative effort resulted in production of the water corrosion map, which provides a valuable document for any new water program, as well as for the management of old wells. With knowledge of the water pH, Project managers can plan appropriate technical solutions. This information allowed the Project to undertake a rehabilitation program to replace galvanized pipe susceptible of being corroded with inoxydizable pipe.

Certain difficulties were generated by the sample collection process of DILABM, which in the view of the Project was too costly. But recommendations made by the consultant were well taken and did improve collaboration during the third campaign. Another discrepancy: During our interviews with the national coordinator and the DILABM technician, they did not appear to be aware of the doubts expressed by the consultant on the results of the first two campaigns of bacteriological analysis, even though the consultant had a meeting with all concerned parties before leaving.

Communication of information on contaminated water points resulted in rapid intervention from the DH and the socio-health team in the affected villages at first and in five districts subsequently.

The lesson is that planning is crucial for good project implementation and cannot be done without an understanding of a Project's critical points. Programming of activities should foresee future needs, especially those which have to be brought from outside of the country.

Communication and timely information are important tools for the decision-making process. Had the water corrosion map been done in a prior project, it would have resulted in more appropriate choices for many boreholes constructed, which are experiencing a high rate of corrosion and will require costly rehabilitation.

Flexibility on the part of project management is important to overcome constraints not foreseen in project design.

4.7 Pump Maintenance and Repair System

4.7.1 Introduction

Although treated here as a separate component, the Project pump maintenance and repair program is really more a subcomponent of the UNICEF-organized and -managed rural water production program. (UNICEF, together with the Peace Corps, was responsible for activities of this component). Its importance lies in the fact that, as experience has shown, when villagers are provided with a watering point complete with pump, they will use this facility only until the pump breaks down. Instead of fixing the pump themselves or bringing in someone from outside to do so, they return to their traditional, often unpotable sources of water supply.

There have been a number of reasons for villagers' failure to maintain pumps. They may never have contributed financially or otherwise to their pump and hence share no sense of ownership or responsibility for it. Often villagers have not been trained in the proper care and maintenance of the pump, nor do they possess the tools and spare parts to fix it even if they knew how. Finally, and perhaps most importantly, many villagers do not appreciate the link between good, safe, potable water and the health benefits that accrue from using it. In the end, for them, it is more a matter of convenience than an issue of good health.

4.7.2 The Plan

4.7.2.1 Objectives of the component

The objectives of this component are associated with one of the long-term goals of the project: to improve the adequacy and quality of water supply in rural areas of Benin's northern Zou province. The short-term objective is to provide an effective and efficient pump maintenance and repair system in support of the overall objectives and activities of the rural water production component. (See section 4.5 for details on this component.)

4.7.2.2 Method and approach

The basis for the design of the maintenance system is the belief that the private sector can provide services better than the government, and that decentralized financial and operational control in the villages will improve pump servicing and maintain a permanent source of potable water. This must be considered a rather innovative approach in a country like Benin, with a highly centralized government management and administrative structure. There are a number of risks associated with this approach that should be mentioned here.

Reliance on private-sector merchants to provide spare parts, and maintain their interest through a reasonable volume of business and profit, involves a certain faith that market forces will indeed be sufficient to sustain the system.

Giving ultimate responsibility to the villages for pump maintenance implies that they will be convinced the price, in terms of cash and their time, is worth the benefits of improved health, convenience, and related values of improved water supply. The extent to which they are convinced depends, to a large degree, on the effectiveness of the Project's health-education component, with which pump maintenance activities are integrally associated.

4.7.2.3 Organization of the component

As previously mentioned, lead responsibilities for this component were to rest with UNICEF. The system envisaged has three tiers. This structure, as described in the midterm evaluation document (WASH report 252 of February 1989), is as follows:

Village water and sanitation committee	=	committee
Village pump caretaker	=	caretaker
District artisan repairman	=	artisan
Banks holding maintenance accounts	=	bank
District chief	=	district chief
District merchant of spare parts	=	merchant
National or regional distributor of spare parts	=	distributor
Provincial Hydraulics Service	=	water agency

In this plan, when a pump has a major breakdown, the village pump caretaker notifies the president of the VSHDC who, in turn, notifies the district artisan repairman of the nature of the breakdown. The artisan then procures the necessary spare parts from the locally authorized merchant. The artisan completes the repair, for which he is paid by the VSHDC with funds from its local maintenance account. In the event of non-payment the artisan is empowered to close the pump. The artisan is also required to make a regular maintenance visit once a month, for which he is also paid.

Regular maintenance and minor repairs are to be handled by the village caretakers, who will be trained for this task by the Project and will carry out their work under the supervision of the district artisan repairmen.

At the provincial level the Hydraulics Service is to maintain a monitoring control function over all activities. Peace Corps pump repair volunteers are also to monitor pump maintenance activities and to supervise artisan repairmen.

4.7.2.4 Planned flow and pace of activities

UNICEF is initially to set up a temporary spare-parts supply system until a regional distributor is identified and district merchants supplied. To this end, UNICEF was to order an adequate supply of pumps and spare parts at the start of the Project and stock them at Project headquarters. A much more limited supply of spare parts would be stocked at the district level, where UNICEF again expected to manage their sale and use by artisan repairmen and village caretakers. until the permanent system is in place.

Meanwhile, it was planned that in each village in which a positive well was to be drilled, the VSHDC would designate one or two members, called pump caretakers, to supervise operations of the pumps and to assist in their maintenance. The selected individuals were to be trained in basic pump operations and preventive pump maintenance, through a series of seminars organized by the Project and held at Project headquarters. The village pump caretakers, after completing their training, were to be furnished with repair and operations manuals, a small kit of basic tools, and a small supply of spare parts. At the point when the borehole was actually dug and the pumps installed, UNICEF would provide refresher training to the district artisan repairmen and the village pump caretakers in proper care, maintenance, and repair procedures. From that point on, the district artisan repairmen were expected to inspect the pumps and the quality of the water, supervise the village caretakers' maintenance activities, and undertake major repair work when necessary.

4.7.2.5 Planned collaboration, coordination, and communication mechanisms

Pump maintenance and repair activities were to involve three key areas of collaboration, coordination, and communication within the Project. The first was the relationship between this component and the rural-water production component. Because the same UNICEF

personnel were in charge of both these activities, mechanisms harmonizing implementation of the two activities would be mostly automatic.

Not quite so automatic, however, were arrangements for the harmonization of efforts between this activity and the socio-health component. In this case a systematic approach was envisaged for coordination. Personnel from both components were to meet regularly to jointly plan training activities for the component. This was to include technical assistance by the Project technical team and their supervisors in the preparation of training designs and training materials.

The socio-health component was also to assist indirectly in the provision of non-technical support to village pump caretakers through the district teams, although the institutional arrangements for this were never spelled out. The mechanism for direct day-to-day collaboration, coordination, and communication between this component and the district artisan repairmen and village caretakers was to be the Peace Corps volunteers. These volunteers would also assist UNICEF with supervision and control of district spare-parts supply, and in negotiations with alternative local suppliers of spare parts.

Responsibility for relations between component personnel and national authorities, on the other hand, was to be the responsibility of the UNICEF manager of the rural water-production component and his counterpart, who also reported directly to the national project coordinator and his counterpart, the senior technical advisor and project manager.

Finally, the UNICEF manager of rural water production and his counterpart also were to take the lead in relations between this component's activities and other donors operating in this area.

4.7.3 Plan implementation review and assessment

4.7.3.1 Objectives

It is difficult to assess the degree to which component objectives were well-conceived, given the fact that very little is actually said

in the official Project document and amendments as to what the objectives of this component really were. In fact, the planned objectives, as stated above, were deduced or inferred from what information was available on this subject, and through discussions with participants in component activities. For many, this lack of definition did not appear to be a problem, since the importance of the component seemed so obvious.

One of the purposes of tightly defined objectives, however, is that they normally contain some sort of success criteria against which progress in meeting those objectives may be judged. While the assessment mission's purpose is not a technical evaluation of the Project, such success criteria would have been a useful tool in assessing interagency collaboration, coordination, and communication. The lesson for the future, then, is to give careful attention to the elaboration of well-defined objectives at the component level that are fully consistent with and supportive of the overall objectives of the Project.

4.7.3.2 Method and approach

Again, it is premature to assess the approaches planned for this component, as described above. The temporary solution, for example, for the provision of spare parts proved not so temporary. It was only in the last few months of the Project that an independent (non-government) regional supplier and local merchants were finally identified and the permanent system put in place, after a similar arrangement with a first set of independent suppliers had failed.

Another problem area with the innovative approach adopted by this component is in the village funds established to finance pump maintenance. While painstaking care was given to explain just exactly how and why this approach was being used, villagers have not bought into this system. In the vast majority of cases, village bank accounts show no activity at all, and the project has yet to face the test when villagers are asked again to replenish their accounts with another 60,000 francs — especially when their initial

contributions remain underutilized. In summary, then, the jury is still out on this question, and the answer may well have to wait for the outcome of ongoing discussions at the national level aimed at establishing a national maintenance system.

4.7.3.3 Organization of the component

A major flaw has been observed in actual component organization, as opposed to how it was planned. For reasons that are not entirely clear, the local village pump caretakers never did routine maintenance and minor repairs, despite being trained to do so. Tools were too expensive, one party said. Others claimed that it would be difficult to charge the villagers for "periodic inspection visits" by the artisan repairmen if they were not seen doing anything.

One suspects that there are explanations below the surface that are not being expressed. After all, the purchase of a very limited number of basic tools would not have broken the budget. And because the India Mark II doesn't break down easily, one might wonder why "periodic inspection visits" by district artisan repairmen were taken to mean monthly visits for which the villagers must pay on every occasion, or risk having their pump shut down. Once again it appears not so much a question of lessons learned as a case of lessons *not* learned, when clearly something is not going as planned.

4.7.3.4 Pace and flow of activities

While the logical flow of planned activities appears to have been sound, and was more or less respected in the course of execution, the pace of implementation was severely retarded by the failure to find a solution to the spare-parts problem in a timely manner. As someone once said, "There's nothing more permanent than a temporary solution." Despite UNICEF's best efforts, this problem plagued the activities of this component throughout the Project. It would be hasty judgment, however, to suggest that this is another case of lessons "not learned." The new, permanent solution in now in place, and must be given time to prove itself before any conclusion can be drawn.

4.7.3.5 Collaboration, Coordination, and Communication Mechanisms

Within the Project, the collaboration, coordination, and communication system put in place worked well. Inputs from other Project components were timely and appropriate; communication flowed smoothly and uniformly; and good working relations were generally well maintained. Similarly, relations between component headquarters personnel and Peace Corps volunteers were exemplary, judging from the high degree of job satisfaction expressed by most of them.

Less satisfactory was the collaboration between the component's personnel at headquarters, in the field and in the district teams. This problem stems from the fact that there was no formal institutional relationship between the pump repair component and the Project-executing agents at the district and village levels (the district teams). A formal relationship did exist, on the other hand, between the component and the independent artisan repairmen, who were considered outside the purview and control of the teams. This led directly to conflict when villagers, unhappy with the performance of the artisan repairmen, and feeling that the repair system was being "imposed" on them by the Project, sought intervention by the district teams to regularize the problem.

The Peace Corps volunteers found themselves in the middle of things and powerless to do much about it. The lesson here is that the failure to recognize the potential for this problem, and to take steps on an institutional level to deal with it when it arose, constituted a gross oversight in the design of this component, and a failure in good Project management.

In the final analysis, the ultimate solution to the many outstanding issues and problems remaining in this area must be sought at the national level. As we have seen in the case of many other components, national authorities appear to be sincere in their desire to develop sound sectoral policies and strategy, and are committed to carrying them out. But at this juncture in the country's development, the inefficient and managerially weak administrative organization and structure, hampered by severe financial constraints, impose serious limitations on officials' ability to achieve goals. It is hoped that experiments in innovative approaches toward a more

rational and integrated development, as attempted by this and other such projects, will lead the way in the not too distant future to full and self-sustained development.

4.8 Cisterns and Alternative Water Supply

4.8.1 Overview of the alternative water supply development program

4.8.1.1 Objective

The main objective of the alternative water-supply development program as planned in the 1985 Project design was to provide a source of water in Project villages where drilling would have been unproductive, or to supplement pump water. A secondary objective was to endow villagers with skills and capacity to construct and maintain rainwater-catchment systems through participation in the construction process.

4.8.1.2 Institutional setting and organization

This activity was to be financed by USAID if resources permitted, and some material input would be expected from the beneficiary villages. Implementation was to be supervised by a civil engineer to be financed by USAID, done with maximum village participation, and assisted by construction PCVs. The Ministry of Equipment was to contribute the service of engineers, masons, and carpenters, as available.

4.8.1.3 Planned activities and expected output

The Project design presented neither implementation plan nor schedule for this activity because the interventions were to take place primarily in villages where drilling had been unsuccessful. Relevant planning would take place when the drilling campaign in an area was completed, and villages in need of alternative water supply had been identified and organized.

Approximately 100 rainwater-catchment systems were expected to be constructed. With the assistance of the USAID civil engineer and the technician from DH, a village-based capacity to construct and maintain rainwater catchment systems was to be achieved by the end of the program.

4.8.2 Plan implementation review

4.8.2.1 Activities implemented and program accomplishments

At the time of the midterm evaluation the alternative program component had not yet been implemented because the drilling campaign was successful and the rate of positive wells in targeted villages was higher than expected in the Project design. Thus, in February 1989 the WASH evaluation team recommended that this component be implemented only as a pilot effort in six villages. Money budgeted for this purpose was sufficient to permit construction of only five or six groups of four storage tanks, each with a capacity of 6,000 liters. But finally, because the rate of positive wells in the subsequent drilling campaigns was also very satisfactory, and because field personnel assigned to the project were so few, no interventions in the cistern program were undertaken. In March 1990, the third Amendment to the Project deleted this component, and replaced cistern construction with a feasibility study of alternative water-supply technology, to be undertaken by the Directorate of Hydraulics.

By June 1991, 309 wells were developed and equipped with hand pumps, but the feasibility study still had not been done. Because the project is in its terminal phase, it is doubtful whether the feasibility study of alternative technology will take place.

4.8.2.2 Assessment of coordination, collaboration and communication mechanisms

No real assessment can be made of an activity that never took place. However, all decisions regarding the cistern construction

program were fully discussed among the Project staff during quarterly programming meetings, and recommendations were made according to the rate of success in the drilling campaign.

4.9 Latrine Construction Program

4.9.1 Introduction

As is the case in many countries, Benin's sanitary engineers are struggling to overcome a legacy of expensive public and institutional latrines, in large part unsuitable for its rural populations. The Government of Benin looked to this project, then, to help turn this trend around. Therein lies the importance of this component: Its activities were to serve as the model strategy for the development of a rural family latrine and sanitation program, which subsequently could be institutionalized.

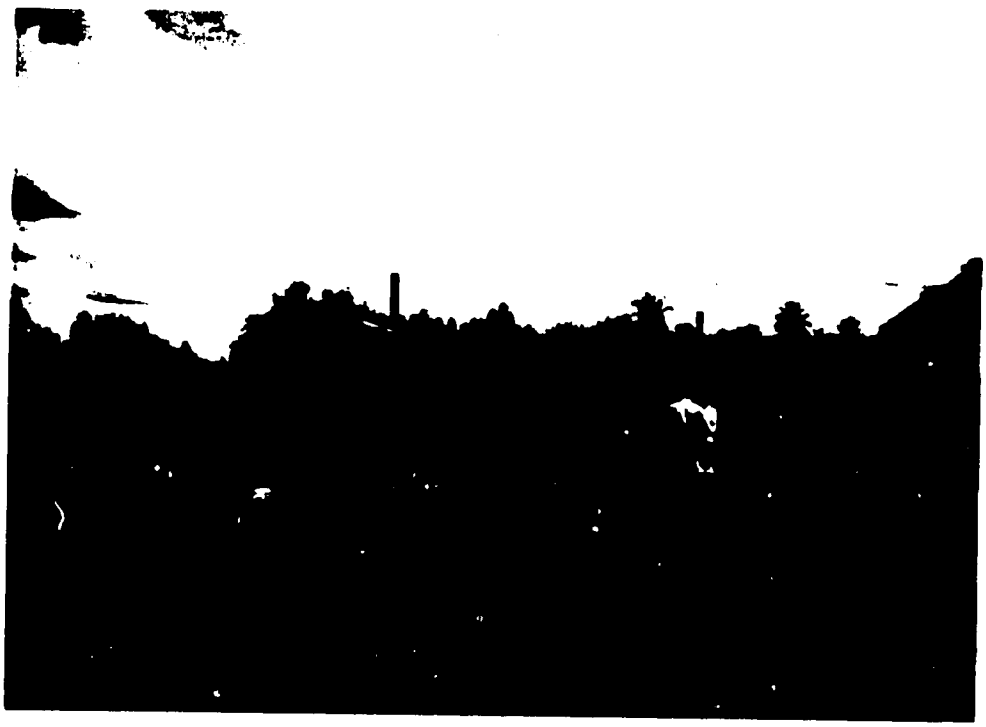
4.9.2 The Plan

4.9.2.1 Objectives

The objective of the village sanitation component was to reduce the potential for fecal contamination within the village environment, and thus presumably to reduce the incidence of fecally transmitted diseases. To this end 100 single-pit, family and village latrines were envisaged, coupled with a village-based health-education campaign to foster local capacity to construct and maintain sanitary excreta-disposal facilities. This objective was subsequently amended to include 100 community (public) and 300 family latrines.

4.9.2.2 Organization of the component

The organization of this component was, in large part, left undefined in the original Project agreement. The sanitary excreta-disposal facilities originally envisaged were to be limited to simple pit latrines. The key to a successful latrine program, as originally envisaged in the project document, was villager acceptance. Informing villagers of the value of latrines was viewed as a major task for the socio-health component. To be successful from a technical



Family Latrine

"VIP" Latrine

viewpoint, the latrine model chosen should be affordable for villagers and feasible for families to build using local materials as much as possible. Lessons learned from similar programs in Africa were to be incorporated.

There were to be two parallel programs in this area: One was to be carried out by the Project under the overall supervision of the Project's civil engineer and sanitation technical supervisor, in close association with the part-time UNICEF-provided environmental sanitarian (sanitary engineer). The second was to be organized by this sanitary engineer as part of UNICEF's regular activities in the country. Both activities were also to benefit from assistance from Peace Corps volunteers assigned to the Project, as well as Peace Corps construction volunteers assigned separately to UNICEF's regular program.

4.9.2.3 Method and approach

The strategy for this component was fourfold:

1. Through research, to gather information about local villagers' attitudes and practices in regard to excreta disposal, and to review other rural sanitation programs in Benin and other countries;

2. To develop several latrine models and program approaches suitable for the Project zone;

3. To develop and carry out a pilot program including training for masons and rural sanitarians, and user education;

4. To evaluate and develop a plan for broad application.

The activities of this component were to be closely integrated and coordinated with health-education and community participation component activities described in section 4.4 above, which were to employ similar training strategies.

4.9.2.4 Flow and pace of activities

The original Project proposal called for limited research and development activities in the initial period. Repeated references were made to the extensive literature on the many latrine models that have been field-tested and accepted in other parts of Africa. Consequently, after a brief information-gathering period, pilot-testing was to begin. Most importantly, this pilot program would be founded on the information about attitudes and practices towards excreta disposal developed by the baseline study. This pilot phase was planned to be completed well before the scheduled termination of the Project, leaving sufficient time for evaluation of the latrine program, and an action plan developed for the broad (perhaps nationwide) replication of the program throughout the country.

4.9.2.5 Planned collaboration, coordination, and communication mechanisms

At the Project level, the plan foresaw this activity organized primarily under the direction of a USAID civil engineer with a strong sanitation background. This individual would work closely with a UNICEF environmental sanitarian and the project sanitation technical supervisor, to conduct the initial research and data- collection phase. Subsequently, they would develop an action plan for carrying out the component.

These activities were also to benefit from input by Peace Corps volunteers. While the volunteers were technically to be assigned to other parts of the Project (pump repair and maintenance and health education) and to the UNICEF regular program, they were to assist the Project in the research and data-collection phase, and also to supply technical assistance for the design, construction, and implementation plan of the two low-cost models planned by the Project.

The Project sanitary technical supervisor had lead responsibilities for ensuring a close coordination between the activities of this component and those of the socio-health component, under the supervision of the Project civil engineer and environmental sanitarian.

As for other components of the project, the Project national coordinator and his counterpart, the senior technical advisor (Project manager), were to transmit periodic reports concerning component preparatory activities, development of the action plan, and a detailed implementation report, to national level authorities. Specifically, for this Project activity they were to report to the MPH director of Hygiene and Sanitation and director of Sanitary Engineering for review and approval. They also were to maintain contact and cooperation with latrine construction activities undertaken by other donors working in the area.

At the implementation level, the sanitary technical supervisor had primary coordinating responsibility under the supervision of the project civil engineer. The project sanitary technical supervisor was also to work closely with the sanitary agents of each district team in selecting district masons.

District sanitary agents, once trained in technical and supervisory aspects of the latrine program, would collaborate with the district mason to identify and train local masons. The latter, finally, would build latrines at the school and village level.

The multidisciplinary technical team would train and supervise the district teams to undertake educational and community-mobilization activities to motivate latrine construction in schools and villages. The project health-education advisor was to provide assistance to prepare training materials.

4.9.3 Plan implementation review and assessment

4.9.3.1 Objectives

The objective of the village sanitation component was to reduce the potential for fecal contamination in villages by providing low-cost, locally adapted latrines, thus presumably reducing the incidence of fecally transmitted disease. This objective was shared with the socio-health component, which would seek to obtain village acceptance and support for the program through community mobilization techniques.

What we observed, however, was a gradual evolution of these objectives in the course of the early information-gathering phase. After examining similar activities in other countries (Zimbabwe, Togo, and Botswana), talking with resource people and concerned parties within Benin, Project personnel decided to begin this activity with the construction of a number of "public" latrines. Moreover, it was decided that local village schools were the best sites for these public facilities.

There are several reasons for this change in strategy. Among them: In villages throughout the Project zone, the connection between sanitary excreta-disposal and health status is not well understood, and village latrines are virtually nonexistent. At best, latrines are viewed as status symbols, and much education is required before latrines are wanted and used. Public latrines would give the program a higher profile which, when coupled with a program of social marketing, should greatly contribute to this component's purpose in the long run.

This change in objective also was based on practical considerations. Schools provided local rallying points — it was believed it would be far easier initially to mobilize community support for the Project, and to secure local inputs, for such a "public" project. From the Project-management point of view as well, it was easier to organize the fairly complex logistics, provide the necessary training, and supervise implementation of a school latrine program than it would be for a family program. To sum up, then, the component objectives were significantly modified to include "public" latrines, which in turn had a significant impact on the organization, flow, and pace of activities, and the types and forms of collaboration and coordination necessary to support such a program.

Finally, while no significant problem arose in the course of modifying these objectives, one lesson learned from this experience is evident. One wonders whether or not this change in objectives could not have been anticipated. What was in the mind of the original project designer(s)? If their intention was to provide only family latrines as it appears, why were the details of this component left so vague and unspecified? Clearly, there was a weakness at the design level that should be avoided in the future.

4.9.3.2 Method and approach

The strategy described above proved basically sound and, despite some exceptions in the pace and flow of events, things went well. Given the complexity of the program and its logistics, relatively few problems were encountered.

One technical problem was encountered with the design of the so-called low-cost school latrine. More than once these latrines caved in because of particular underlying soil conditions.

The lesson learned from this experience is the need for sensitivity to changing seasonal water-table levels. Results from this problem were some loss of confidence by villagers, increased costs in latrine construction, and delays in completing the latrine program.

The basic approach and method used for this component appear to have been sound, but the process is incomplete in that there has been no evaluation, and no plan for broad application is in sight. If one of the objectives of this component is to "institutionalize" this program in Benin in the future, lack of final evaluation is a serious shortcoming.

4.9.3.3 Organization

As we have had occasion to remark before, the objectives of this component were weakly defined. So, too, was its structure and organization. While the Project plan called for the construction of latrines, little was said about what kind of latrines and what procedures to use. Perhaps this was deliberate because Project designers wished to afford maximum flexibility in the field to organize and adapt the program to local conditions. Indeed, this was to be an experimental pilot program.

In fact, considering the complexity of the program, organization went remarkably well. High marks go to those finally responsible for organizing this element: They took an idea, gave it form, and carried out a complex and innovative program successfully. Unfortunately, we cannot draw lessons from this experience in organizing such a program without completing it through final evaluation.

4.9.3.4 Flow and pace of events

The planned flow and pace of activities of this component are described in section 4.9.2.4 above. It is in the execution of this planned flow and pace that the component met its most serious challenge. There is no escaping the fact that this component got off to a very late start. There are probably many reasons for this delay, several of which will be mentioned here.

Initially, the Project was plagued by delays stemming from the slow completion of USAID contracting arrangements with the consulting firm selected for overall Project management. Delay in initial disbursement of funds from USAID to the contractor ensued. This in turn led to additional delays in recruiting technical assistants and placing them in the field. The domino effect, piling delays on top of each other, seriously retarded the Project field-planning process and the smooth start of preparatory activities so essential to an integrated, multisectorial activity such as this Project.

Valiant efforts were made to overcome this handicap, but inevitably the confusion in the beginning meant that not everything started in a well-coordinated fashion. Not only did considerable time pass before attention could be focused on this component, but the component itself also required considerable planning and organization before implementation could begin. Consequently, some important first steps "fell through the cracks."

As an illustration, the baseline survey should have addressed attitudes and practices of villagers towards excreta disposal. This was deemed an essential first step in planning and designing such a program. Neither time nor resources were sufficient to do this, and consequently it was not done. When time and resources were available, the Project was already approaching the midpoint, but the surveys that had been done were superficial at best. Meanwhile, the Project was already gearing up for the school-latrine program, a relatively simple affair compared to a village-latrine program.

Considerable time and resources were also required in the complementary socio-health program to prepare training materials and plans, which are considered an integral part of the latrine program.

Without belaboring the point, it is clear that repeated delays and irregular pacing and flow of events had a serious impact on planning and implementation of activities in this component. What lessons can be learned from this experience? The project itself was over-ambitious, displayed significant design weaknesses, and, in the planning, was not allotted sufficient time. These conclusions are elaborated in detail below.

4.9.3.5 Collaboration, coordination, and communication mechanisms

That so much was accomplished by this component, given the constraints mentioned above, is largely the result of the remarkable degree of collaboration, coordination, and communication at the Project level. All staff displayed a high degree of professionalism and developed smooth and harmonious working relationships over time. Collaboration seems to have been just as effective with the principal beneficiaries at the district and village level. Again the collegial, integrated approach appears to have proven itself an effective way to undertake multiple tasks simultaneously at different levels of execution.

The cascading, participatory approach to training, which was central to the implementation of project activities, also appears to have met with unqualified success. Collaboration with the Peace Corps was, in large part, positive and successful, and proceeded as planned.

There was a serious difficulty with collaboration between this Project component and UNICEF's parallel and complementary latrine program, which was the responsibility of the UNICEF environmental sanitarian. For what appear to be non-technical reasons, this individual was unable or unwilling to carry out the latrine construction job, and UNICEF ended by abandoning its separate program.

Finally, as was the case for other Project elements, the mechanisms for collaboration appear to have worked less effectively between the Project and national authorities. (See comments at the end of section 4.4 for details.)

We would like to reiterate the desirability of a final evaluation for this element, as well, in the context of an overall Project terminal evaluation.

4.10 Epidemiological Surveillance and Guinea worm Reduction Activities

4.10.1 Overview

Beninese have always used the rain-catch swamps and ponds to provide their water; but these marigots dry to shallow pools in October, November, and December, after the big rains. This is the intense period of transmission for Guinea worm disease (dracunculiasis) when *Cyclops* populations are high in the stagnant waters. Again at the beginning of the small rains in April, as ponds begin to fill, the transmission rate is high.

As of 1990, projections from the 1979 census placed the total population figure for Benin at about 4,741,000. It is believed that 1,500,000 people (one-third of the population) are at risk for dracunculiasis, as Benin sees an average of 50,000 cases yearly.[13] Though this scourge exists throughout the six provinces of Benin, the highest endemicity is found in the province of Zou and the surrounding subprefectures, which had an incidence rate of 79.22 percent in 1990. Of the people afflicted, one in 20 becomes permanently disabled.

Benin suffers social, economic, and personal losses from Guinea worm disease as victims typically are incapacitated for at least three weeks, usually during the planting season. Personal suffering, school absenteeism, inability to work, and consequent agricultural loss are some of the costs.

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[13]Cases probably underestimated before the National Guinea Worm Survey of Spring 1990

4.10.1.1 Project goal and epidemiological surveillance objective

The Project goal was to qualitatively improve the health and living conditions of the Beninese rural population. In Project planning, one of the indicators to measure Project impact was the reduction of Guinea worm disease by 30 percent. Epidemiological surveillance was seen as the best tool to monitor the overall effectiveness of the various Project interventions, to determine improvement in health conditions through reduction of the gamut of diseases to which rural villagers are prey. Further, such public health surveillance could serve as an instrument for decision-making in determining where further water, sanitation, and health efforts should be made.

4.10.1.2 Institutional setting

USAID was supposed to provide services of a technical assistant who, working with the health educator and socio-health technical team, would design and launch the baseline study. USAID was also to finance materials for implementing the surveillance. The GRB was to make available the district health teams, which in collaboration with Peace Corps volunteers would be responsible for gathering the data. UNICEF's contribution was the largely undefined role the UNICEF sanitary engineer might play.

4.10.1.3 Organization

The national coordinator had overall responsibility for coordinating all activities in this component. As a subcomponent of rural health interventions, epidemiological surveillance was directly under supervision of the Project's socio-health technical team. The USAID health education advisor, the USAID civil and sanitary engineer, the UNICEF sanitary engineer, and the Ministry of Health provincial director for health education and hygiene and sanitation were all expected to participate in developing this activity.

At the district level, implementation of operations would be the responsibility of each district team, led by a state nurse and a Peace Corps volunteer. Data gathered was to feed into the MPH health information system, but also was to be retained at the village level to help local socio-health committees set goals and priorities in their bootstrap efforts.

4.10.1.4 Planned activities and expected output

This activity was planned to create a baseline, a methodology, and an appropriate survey instrument to lay the foundation for long-term epidemiological surveillance, in order to measure change in village health conditions. A planned KAP (knowledge, attitudes and practices) study was also to lay a baseline to permit measurement of change in health-related individual and social behavior. The baseline survey was to be conducted in the earliest stages of the Project.

Among the data to be collected were demographic information, prevalence and incidence of water-borne diseases, existing health resources such as health personnel and facilities, available water sources, and vector-breeding sites. The KAP study was to measure attitudes and practices concerning water use, sanitation, response to disease, communication, and decision making patterns.

4.10.2 Program implementation review

4.10.2.1 Activities implementation and program accomplishment

The baseline survey that was to begin at Project start-up never took place. However, when the need for geographical information to locate the villages of northern Zou became imperative, surveys were begun in the last quarter of 1987. The senior project technical advisor, the health-education volunteers, the district teams, and the sanitary engineers all participated, and were joined in limited degree by the OCCGE epidemiologist, Dr. Chippaux.

These were the uncertain beginnings of what was to become the epidemiological survey. It began more as survey to gather geographical information system (GIS) data to be used for Project management information and decision-making needs. The epidemiological data collected were not designed by the epidemiologist consultant envisaged in Project documents. It was the good fortune of the Project that Dr. Chippaux was available in-country and willing to give a bit of guidance to specify what Guinea worm epidemiological information was collected. In December 1987 the initial survey covered 737 villages, hamlets, and localities (human settlements) in the Project area.

The high incidence of dracunculiasis cases found in this survey supported the growing importance Project personnel were placing on this water-borne scourge. A second survey was then conducted in April of 1988, and confirmed the second peak emerging period of Guinea worm.

The UNICEF sanitary engineer now determined to reorient his activities, and focused entirely upon elaboration of the questionnaire, coordination of the surveys, and the data processing and analysis of data accrued. He was guided and educated in this process by Dr. Chippaux. UNICEF undertook to pay per-diem expenses for the health district teams while they were engaged in this work.

That first set of activities developed the "basic epidemiological surveillance system" which had come to focus largely on Guinea worm disease. Thereafter, through April 1991, an annual survey in two parts for the two peak periods of Guinea worm emergence was conducted. To date, four two-part annual surveys have been completed, all executed following the same pattern. From 1987 to April 1989, the UNICEF sanitary engineer took responsibility for this activity.

The group recommendation, growing out of the WASH workshop held in May 1988 was to hire a Beninese epidemiologist to replace the short-term consultant epidemiologist who had never

materialized. Dr. Hounkounou was finally hired locally in March 1989, a few months before the departure (in July 1989) of the UNICEF sanitary engineer.

A plan for a national Dracunculiasis Eradication Program was prepared by the new epidemiologist, and a provisional Guinea Worm Committee was nominated by the Government. The plan was submitted in July 1989 and approved in November 1989 by the Ministry of Health as the national plan.

The December 1989 and April 1990 survey was coordinated and analyzed by the senior technical advisor (PRAGMA). In December 1990, Dr. Chippaux, as a consultant to PRAGMA, evaluated the impact of Project activities on Guinea worm incidence.

Another group of Peace Corps volunteers were very active in the 1990 and 1991 survey. Arriving in January 1990, they were assigned outside the framework of the Project to assist the new Beninese Guinea Worm Eradication Program, which UNICEF was now preparing to undertake.

As results of the surveys appeared, it became evident that reduction of Guinea worm incidence in the six Project districts of Northern Zou was nothing short of spectacular. The incidence declined from 3.21 percent in 1966 to 2.34 percent in 1989 and 1.27 percent in 1990. Guinea worm elimination became an unexpected Project output, and Guinea worm eradication developed de facto into a central Project objective.

The last survey was conducted in April 1991, and data analysis was still underway at the time of the assessment team's visit.

The developing survey activity generated other interventions, and in some ways outgrew the Project itself. The Project had now become an advocacy tool for the eradication of Guinea worm. These survey activities led to:

- organization of a National Conference on Dracunculiasis in December 1988;

- o creation of a Provisional Committee for the Eradication of Dracunculiasis, coordinated by the GRPB/USAID/UNICEF national coordinator;

- o 1990 National Guinea Worm Survey undertaken by the GRB with UNICEF financing, and in close collaboration with Project staff;

- o establishment of Guinea worm incidence as a criterion for village selection in the water supply program;

- o Beginning elaboration of a pilot Management Information System (MIS) as a tool to monitor and target Dracunculiasis eradication interventions and other health problems; and

- o the support of UNICEF and other agencies for the Benin Dracunculiasis National Plan of Eradication.

4.10.2.2 Organization

The only form of organization in this component concerned the biannual survey activities. In fact, the absence of well-defined and structured organization has left a vacuum at the end of the Project. The Guinea worm epidemiological surveillance system generated by the Project does not have a clear future. Currently, the epidemiologist seconded from INSAE to the Project is assigned by the GRB under its 1989 Cooperative Agreement, but his future collaboration has not yet been ensured.

4.10.2.3 Coordination, collaboration and communication mechanisms: review and assessment

Even though the epidemiological surveillance component of the Project has been largely limited to Guinea worm, the accomplishment is quite remarkable for an unplanned component. In the Project design the component was poorly defined, and no implementation plan was provided. Only the good level of collaboration among Project staff has helped build something of value. Much of the activity was supported by institutions and people outside the Project, such as OCCGE, ORSTOM, and the Benino-Suisse project. The effort has been very strong at the field level, and the rate

of village committee participation in data collection has increased over the years. The strong collaboration at the field level has resulted in a new formal collaborative agreement between UNICEF and the U.S. Peace Corps for Guinea worm efforts to follow.

A weakness has been the occasional lack of coordination and communication between the different institutional partners in this effort. When the assessment team met with people, it was obvious that only a few knew how and when Guinea worm became a de facto project objective instead of an indicator.

The program used for data processing and analysis varied from one set of surveys to the next. Since the departure of the UNICEF sanitary engineer and the PRAGMA chief of party in April 1990, the Project has been experiencing difficulties in data processing and analysis. The program, having grown randomly, did not transfer skills in the more than three years of its existence. If the GRB epidemiologist is going to be permanently allocated to Guinea worm surveillance, he will need some further formal training in epidemiological software design and management, and could only benefit from a support relationship formally established with, for example, CDC or VBC.

The only communication channel was the distribution of survey reports and the quarterly progress report. Although Dr. Hounkounou had been trained outside the Project, and did have one short visit to CDC in Atlanta, serious on-the-job or formal training was largely non-existent, and this remains a major handicap for the sustainability of epidemiological surveillance in the Project region of Zou.

4.10.3 Lessons learned

- o Participation is critical for the durability of assets. Development will never be achieved through technical assistance as long the beneficiary is not associated with all phases of the work.

- o Technical assistance needs to be associated with either formal or on-the-job training.

- Implementation of all program components or sequences should always remain the responsibility of the recipient country.

- Planning and collaboration alone, even if they lead to success, do not guarantee sustainability.

4.11 Construction of Project Headquarters

Original plans called for construction of the Project headquarters to begin with the inception of the Project, in order to consolidate all activities out of one center and permit maintenance of rigs and vehicles under full supervision.

However, contracting for construction of the permanent headquarters at Bohicon was delayed by differences of opinion between USAID and the GRB on choice of contractors, and by the constraints inherent to A.I.D. projects when offshore procurement is required. With pre-implementation delays, the headquarters component was not begun until October 1988. ARTICO 80 was the Beninese contractor finally employed, and architectural supervision was awarded to the firm of Afrique Omnitech. Day-to-day supervision was to be the responsibility of the PRAGMA long-term TA engineer, supported by the PRAGMA/MCDI technical supervisor out of Washington. When technical problems arose, REDSO/ Abidjan was the reference point and control.

Until the center was completed, the motor pool and repair unit was in Dassa-Zoumey and the Project used rented quarters in Abomey and Cotonou.

Once begun, construction continued in an orderly manner. Interagency "coordination" was served by a weekly tour of the premises to show the Center as it developed. There were a few problems:

- o U.S. specifications for beams could not be met by the machines producing them in country. The REDSO engineer, when advised, came and agreed to accept changes in order to work with locally available beams, and the Government of Benin accepted the changes as agreed by REDSO.

- o The UNICEF chief mechanic disagreed with plans for positioning the garage grease-pit, and suggested several changes, which were accommodated without problem.

- o It took several months before appropriate light fixtures could be found.

- o After the building was completed and received, settling caused fissuring in the walls, which had to be patched and refinished. In addition, the gutters' tolerances were not equal to the local rain burden and had to be rearranged. But these problems were taken care of by the contractor under terms of the guarantee.

In fact, the headquarters construction was essentially a neutral element in relations between the agencies. The only problems were the slow start, the early inconvenience of separated project locales, and the fact that some Project personnel resided in Cotonou until Bohicon was available, thus slowing early work considerably.

When the Project moved to Bohicon, PRAGMA requested space at UNICEF for a Cotonou liaison "desk" to avoid the continued expense of maintaining a separate office. But PRAGMA was not accommodated, and was moved to Bohicon integrally. In fact, the office left to the UNICEF project component in UNICEF/Cotonou was scarcely adequate to its needs for space for personnel, machines, and files.

Project Head Quarters, Bohicon

4.12 Summary of Conclusions at the Component Level

4.12.1 Institutional framework and Project design and organization

4.12.1.1 Project design

This was a complex Project, involving more than three donor agencies, more than three ministries, and numerous substantive components and programs. The Project, successful because of the commitment and professional ability of the people involved, nevertheless clearly demonstrates that multiagency projects require greater specificity in joint planning.

In that it involved so many agencies, this was a pilot project, and designers may not have understood the level of coordination that would be needed. But the Project was not sufficiently designed: much was named, and then left vague and unformulated.

There is no substitute for good design and review. Structure, roles, relationships, objectives, time and synchronization, means, administrative and accounting structures, and methods all needed to be defined. Tightly defined objectives also provide criteria for evaluating successful operations. The discipline of good and thorough design should balance ambitions with the resources and plans deployed in their pursuit.

4.12.1.2 Timing

The timeline for the Project was not realistic. Optimism rather than realism governed AID's suggested time frame. Nor was the need to synchronize different agencies' structural time heeded. Delays were permitted to overwhelm a planned period of studies and component and administrative design, and the early technical assistance proposed for this planning never materialized. Therefore, vital planning and studies didn't get done.

It is also necessary to realize that desired change takes longer than outsider project designers sometimes realize, since it is necessary cumulatively to modify an integrated system of resources, perceptions, attitudes, and behavior. It is important, therefore, that succeeding projects build upon the base and resources this Project has established. But the stated objectives to change water use behavior leading to improved health are too ambitious. The Project inputs are necessary, but not sufficient, to enable rural Beninese to achieve the changes necessary to reach that goal.

4.12.1.3 Institutional constraints

All government input to the Project was crucial, but planning was based on what should be, and not what could be. It is necessary to reiterate that when planners do not consider institutional constraints and human elements, the best theoretical design may not work. In the design stage questions should have been raised as to how the Project could and should bolster competence and program capability for each ministry involved. Each implicated ministry should have been fully cognizant of, and active in, relevant Project activities. There was shortfall on both sides. It seems reasonable to suggest that, if the GRB wants projects and funding, then it must be accountable for its own responsibilities to the program. Participation is critical for the durability of assets. If the beneficiary does not participate, there is no development.

4.12.1.4 Coordinator's role

The coordinator's role was pivotal. The Project was fortunate to have someone with the capability and commitment of Mr. Dossou-Yovo, but his job should have been defined and designed to provide real clout both within his own ministry and with others working on the Project. Because it was not, there was a tendency in the government to think of the Project as anomalous, and not integrated into government structures and plans. Such a role needs to be designed and structured, not just named and filled.

4.12.2 Administration and management

When the partners hold differing fundamental perceptions as to what and how a Project is, it does not make for good, effective, and harmonious management and administration. For this situation, we must credit both a competitive sense of "territoriality" among the agencies involved, **and the lack of joint planning to create an efficient and agreed Project design.**

If it were expected that a number of integrated and coordinated activities should be undertaken, then it was incumbent to design a structure with clear distribution of power, responsibility, decision-making range, accountability, and coordination, and to couple this with a management posture of flexibility and collegiality. This was never done, and the Project personnel had to flounder, seeking through their own good will and skills to define the organization that was never specified. That they were able to achieve such good results speaks to the capability of the people involved.

4.12.2.1 GRB's management role

Ultimate responsibility for implementation of a development Project should belong to the recipient country, which has the task of policy guidance and oversight. For the many reasons cited, there was default at this management level.

4.12.2.2 The role of workshops and meetings

For common understanding, coordination, and synchronization, and bringing things back on path, the several workshops played an important role. As well, Project management developed over time a useful system of regular informational and coordination meetings, including field meetings, and regular reporting schedules, which served the need for communication and timely information. They were effective, but might have been further developed as a management and coordination tool.

4.12.2.3 GW surveillance

Once the GW element was determined to be an objective, it became incumbent to lay an appropriate and scientifically sound base for the epidemiological surveillance necessary to measure this and other outcomes. This should have become a conscious management decision and deployment.

4.12.2.4 Planning ahead

It is a truism, but needs to be repeated here, that for coordination and synchronization, it is necessary to understand the critical points of a Project, and in the planning to anticipate future needs in order to achieve effective programming. This is especially true when one considers contracting and offshore procurement.

4.12.2.5 Outreach

The Project maintained effective outreach toward other Projects and agencies working in the area.

4.12.3 Socio-health program

The objectives of this component were unrealistic given the time frame of the Project. The increase in importance of Guinea worm activities was also unanticipated. One solution would have been to modify the objectives early on, to make them more realistic. A second solution might have been to retain the long-term objectives as stated and to implement the Project in phases. In this event, the Project just completed would have been referred to as the first or pilot phase of a long-term water and sanitation effort, during which social mobilization, health education, and hygiene and sanitation delivery approaches would have been tested and validated.

4.12.3.1 Success of training of trainers

The collegial, multidisciplinary integrated approach, coupled with a multi-tiered, cascading training system in which the training-of-trainers principle is widely developed, has provided an innova

tive and successful experience. With its strong emphasis on community mobilization and participation, this Project should serve as a useful model for future activities.

4.12.3.2 Government participation

There was a serious institutional lacuna at national and provincial levels that prevented Government authorities from fulfilling planned roles and responsibilities in the Project. A more active participation is clearly indicated for any follow-up project, but project designers should carefully examine the constraints.

4.12.3.3 Early delays

There was serious delay and confusion surrounding the start of this component. This led to the loss of key Project activities, and significant disruption in the planned flow and pace of operations.

4.12.4 Rural water production program

The drilling and pump-installation program was a key component of the Project, and therefore closely linked with other interventions under different agency responsibility. By the end of the Project, projected outputs had been successfully completed beyond design expectation. It is, however, important to stress the following key issues that affected the process from design through implementation.

4.12.4.1 Early delays

The Project design seriously underestimated the time frame necessary to synchronize the different interventions to be carried out by different institutions. Because of the complex organizational structure of the Project, this resulted in lack of coordination at different points during Project implementation. Had the drilling been contracted with a private firm, delays due to differences in implementing agency procedures could have been seriously detrimental to the Project. Only a cost-benefit evaluation could reveal the real financial cost of the almost two-year delay in start-up.

4.12.4.2 Success of collaboration

The formal and informal collaboration and communication mechanisms that linked these codependent project activities contributed to the high rate of achievement of the well-drilling campaign and pump-installation program. The level of collaboration between Project institutions and villagers in the implementation process has built a sound base for Project sustainability.

4.12.4.3 GRB financial and institutional capacity

Because the Project's design phase failed to adequately evaluate the host country's financial and institutional capacity, Project implementation was thwarted when the GRB was unable to sustain planned policy and supervisory roles. Questions remain about Government and community capacity to meet recurrent costs after the Project's termination.

4.12.4.4 Institutional development

The emphasis on institutional development and the decision to build upon existing governmental structures should lead to sustainability. The focus of activities in the water-production component, through technology transfer and capacity building, resulted in reinforcement of DH capacity. DH staff participating in the Project are now able to assume responsibilities for 1) petrography; 2) well drilling; 3) pump installation; and 4) mechanical mastery of equipment.

4.12.4.5 Benefits of collaboration

In the final analysis, the successful accomplishments of this Project, combining the expertise, experience, and other strengths of several donor agencies and several ministries, have demonstrated the appropriateness of combining resources and thereby avoiding parallel and redundant actions.

4.12.5 Water quality analysis

4.12.5.1 Need for water-quality testing

At Project termination, we now note that water-quality testing has not yet been performed on all the new wells. Although physico-chemical analysis may no longer be needed because of the knowledge of underground water characteristics obtained, bacteriological testing must continue. This deficit situation is the result of a lack of good planning, as well as designers' underestimation of the operational capacity of national institutions, and the practicality of the means envisaged for this task.

4.12.5.2 Problem-solving adjustments

Water-quality analysis plans were substantially changed during implementation. Problem-solving efforts in the field led to a better mobilization and use of human resources to accomplish physico-chemical testing. These efforts also helped increase DH field-level technical capability to undertake this testing in the future.

4.12.6 Maintenance and pump repair system

4.12.6.1 Undefined objectives

Component objectives were left largely undefined in the original Project document(s), and had to be inferred. There is a need for future projects to ensure that well-defined micro-objectives, at the component level, are designed to be fully consistent and supportive of overall project objectives.

4.12.6.2 Need for policies and procedures

There are clearly serious problems with the organization, method, and approach of the pump-maintenance effort. Regrettably, sufficient time has not yet passed so that useful conclusions can be drawn. Any future technical evaluation of the project should pay particular attention to this activity. There is a clear need to establish national policies and procedures for this sector.

4.12.7 Cisterns and alternative water supply

As was noted above, it is difficult to assess an activity that did not take place. There was, however, full coordination among Project staff on the recommendations not to undertake this component. The success of the drilling program, and therefore the lack of need for alternative supply systems, was fully discussed during quarterly programming meetings. Although a feasibility study for alternative systems was subsequently recommended, it is doubtful that it will take place because the Project is in its terminal phase.

4.12.8 Latrine construction

4.12.8.1 Modified objectives

Objectives of this component were significantly modified to include "public" latrines. This decision, in turn, had a significant impact on the organization, flow, and pace of activities, and the types and forms of collaboration and coordination necessary to support such a program.

4.12.8.2 Need for evaluation

There is an urgent need to conduct a technical evaluation of activities in this Project component before one can develop significant conclusions. At this point it is clear that repeated delays and irregular pacing and flow of events had a serious impact on the planning and implementation of activities.

4.12.8.3 Coordination problems

Interaction between USAID/PRAGMA and UNICEF regarding the latrine-construction program was not smooth, and some confusion existed concerning the allocation of responsibility for these efforts.

4.12.9 Epidemiological surveillance

4.12.9.1 Lack of baseline data

This activity has achieved, unevenly, some very important things. Epidemiological data provide the essential indicator for achievement of the central purpose of the Project: improvement in the quality of life through improvement in health for rural people of northern Zou. But no baseline study was done, and a real epidemiological survey design and implementing plan were not made, although a set of biannual Guinea worm incidence surveys were undertaken and tallied. Neglecting the vitally important preliminary studies made valid measurement of change impossible. This is an effort that just "happened" and then grew. Setting of priorities and planning could have made it all better.

4.12.9.2 Sustainability

The failure to implement activities in close collaboration with the Ministry of Health impairs and perhaps prevents sustainability of the Guinea worm surveillance efforts established by the Project. It is essential to provide an indigenous foundation for activities, and data gathered should be compatible with overall HIS plans and systems.

4.12.10 Construction of Project headquarters

4.12.10.1 Early delays

Plans called for the construction of the Project headquarters to begin with the inception of the Project so as to consolidate all activities from one center. Early delays resulted from differences of opinion between USAID and the GRB regarding the choice of contractors. Other delays were caused by A.I.D. procurement procedures. Construction was not begun until 1988 and not completed until December 1989. This slowed early work, since the DH did not wish to move personnel to reside in Bohicon until the headquarters was ready. The inconvenience of divided Project locales was also prolonged.

4.12.10.2 Construction progress

Once construction began it continued in an orderly fashion, and a weekly tour informed all Project personnel of the state of development. This led to some agreed changes that improved the workings of the site and equipment. Minor construction problems had no effect on Project collaboration.

5. Conclusions and Recommendations

The joint-agency Benin Rural Water and Sanitation Project has successfully provided northern Zou Province with 281 positive wells in villages that have received training for social mobilization, pump maintenance, and intensive health education. The Ministries of Health and Social Affairs have jointly established the capability for multidisciplinary planning, training, and outreach. The Ministry of Equipment's Directorate of Hydraulics now has capable teams trained in the technology of water-supply production, as well as the equipment to continue and maintain this activity. Further,the Project has led to the creation of a system for Guinea worm (GW) surveillance and elimination. This has been an effective and productive project; it has also been a complex project, involving four multifaceted institutions and providing a program with multiple elements.

The object of this assessment team has been to examine the collaboration, coordination, and communication in the joint achievement of the Project, and to do this it has been necessary to review the process involved in this achievement. To this end, we considered the following central issues in planning, design, and implementation that affected collaboration in the Project.

5.1. Multi-agency and multi-component projects require greater design specificity because differing fundamental perceptions of the nature and structure of a project do not make for effective, harmonious management and administration.

Recommendation

Joint planning is an absolute necessity, as is the requirement for an agreed project structure detailing distribution of power and responsibility, decision-making range, accountability, and mode and methods of coordination. Naming an activity is not equivalent to planning it.

5.2. There is frequent underestimation of time necessary for project design, planning, and implementation. The procedural time necessary in the design stage may vary from agency to agency; and time must be allowed for joint agency planning before the project begins.

During implementation, the achievement of certain objectives may require massive cooperation and communication among the involved agencies, and flexibility to allow for this is needed within the project's allotted time frame.

Certain key project activities must occur in the appropriate order, and must not be allowed to drop out because of time pressures and temporary breakdowns in the collaborative process. In this project, the essential base line studies and the KAP study were not done because of the lack of time concordance, and subsequent pressure to "get to the drilling."

Recommendation

Realistic timelines must be developed, so that flaws in the timing of procedures and implementation do not cause subsequent problems.

5.3. Different goals, purposes, and objectives characterized the institutions participating in the Project, and these are based on their different *raisons d'être*. There are significant differences between multilateral and bilateral organizations that may have an impact on interagency collaboration.

Thus, USAID's original 1980-81 Project was suspended because of problems in the bilateral relationship. Later, delays in 1986-87 were partially caused by U.S. legislation (the Brooke Amendment) that constrained U.S. development assistance to the GRB. **UNICEF was not delayed by any similiar constraints.** Where A.I.D. is the prime funding agency, its project design cycle should govern the timing of deployment. But where UNICEF participates in a joint project predominantly funded by A.I.D., coordinating responsibility must be jointly shared.

Recommendation

Mechanisms **should be built into project design** that will permit congruent project launching and better coordination of complementary inputs.

5.4. Each agency has rules, regulations, procedures, and a management style that affect scheduling and other elements in the project design, planning, and implementation process. These may not converge.

Procedural incompatibility and delays in central agency accounting systems caused management difficulties for USAID/Lomé, PRAGMA team management, and the UNICEF team management. A stage of mutual training in each other's systems has been suggested for subsequent joint projects; equally, a detailed joint management plan should be required.

Recommendation

Attention must be paid to these differences between agencies **in the design stage** to define and design functional systems.

5.5. A just assessment of government's absorptive capacity is essential to guiding realistic project design. Absence or frequent reassignment of government personnel, which have been common in Benin, have seriously perturbed the national policy guidance and monitoring system, as well as the provincial contact and monitoring planned for the Project.

Recommendation

No project achievements are sustainable without full participation by beneficiary institutions and personnel. It is necessary to ensure that essential roles and responsibilities **can** be fulfilled. The potential for government participation should be assessed and designed, not just posited. A government coordinator should have access and authority, and these must be built into project design.

5.6. Important differences may exist between the perceptions of government authorities and technical assistants about the purpose of technical assistance.

Host-country government staff and agency personnel in the field may have different perceptions of the role, responsibilities, and purpose of technical assistance. The illuminating example here is the beginning of an epidemiological database system established through the Project, even though the skills to solidify, maintain, and develop this system were not passed on.

Recommendation

The counterpart relationship is both essential and delicate, and the training to institutionalize a capacity should never be short-changed in order to "get the job done."

5.7. When an unexpected development advantageously changes a program or project, it is incumbent on sponsors to consolidate the asset. Though it grew in an almost random fashion, the epidemiological surveillance system, with its Guinea worm eradication element, was the added value. It needs the support to make it sustainable.

Recommendation

Adequate formal training and support for Beninese personnel should be provided to make the surveillance system a sustainable asset, and it should be integrated into the national HIS system.

5.8. Reliance on the private sector to provide basic project components and supplies is a mistake if private enterprises cannot sustain the system.

In the case of multisectoral programs, design teams need to question whether private or public enterprises are the better vehicle to accomplish objectives. The difficulties encountered in obtaining spare parts for pump maintenance suggest that the private sector was not the best choice in this case.

Recommendation

Examination of the capability of the system should replace ideology, and the choice of private or public sector support should be pragmatic.

5.9. Monitoring has been weak, and evaluation has not been completed.

Recommendation

A full final evaluation of what the Project has accomplished would be appropriate.

5.10. At times there is systematic bias in favor of short-term solutions to problems requiring long-term approaches, sometimes leading to a waste of resources.

This Project has accomplished much in the way of human resource development and siting water points. But it is essential to recognize that the change in traditional ideas and behavior needed to change health status at the local level is a long-term process that one four-year project will not accomplish. It is usually easier to provide facilities and infrastructure than to build enduring programs and activities.

Recommendation

For this Project to really meet its goal, the efforts it has begun must be consolidated and supported for a longer period of time.

6. Looking Ahead

6.1 Project Termination and Final Activities

The original 1980-81 Benin Rural Water and Sanitation Project was due to terminate December 31, 1986. Project Agreement Amendment #2, dated December 6, 1985, revived the moribund Project and set a completion date (PACD) of December 31, 1990.

Actual Project implementation did not begin until 1988, and in the fall of 1990 the GRB Project Coordinator requested the Project be continued till the close of 1991. (It should be remembered that this was designed as a five-year project, then reduced to a four-year project, and was eleven months behind schedule.) However, allowing the Project to remain inactive from 1981 until 1986 necessitated special waivers for continuance, which were not in hand until March 1991. From December 31, 1990, until the date of this writing (July 1991), the Project has been operating on faith and no contract, but the contract process has now been engaged, and it is assumed the USAID/PRAGMA operation will continue until September 1991.

PRAGMA proposes for this period to continue community development and health education with the district teams, to improve water-quality monitoring and pump-maintenance supply systems, and to distribute Guinea worm filters for use in farm field ponds. PRAGMA also proposes to do a social marketing study and a modified KAP study during this period.

UNICEF completed the terms of its contract with A.I.D. by the end of December 1990, but received a further sum of $106,000 to provide another 25 wells by June 30, 1991. The joint UNICEF-A.I.D. effort terminated on that date.

Continuation of this Project has at many points seemed uncertain as termination dates have approached, and then extensions have come, sometimes tardily. There is the hope in many parts that the

Project may be extended again because it has performed well. Both UNICEF/Cotonou and UNICEF/New York have expressed strong interest in some form of continuation.

6.2 UNICEF Planning for Water, Sanitation, Environment, and Dracunculiasis Eradication

In 1989 the UNICEF Executive Board approved an integrated water-supply and sanitation program for 1990-1994 as part of its program of cooperation with Benin. The program, planned for Zou Province, is divided into four components:

- **Borehole construction, pump management, and maintenance**

  The DH, with technical assistance from UNICEF, is to drill 500 boreholes and equip them with hand pumps.

- **Guinea worm elimination**

  Guinea worm is to be eliminated in 80 percent of contaminated villages of Zou province. Key activities will be: health and hygiene education, filter distribution, chemical treatment of infected water points, and village-based epidemiological surveillance. UNICEF expects to collaborate with the Peace Corps, Global 2000, Dupont Nemours, Village Health Committees, the Ministry of Health, and the Directorate of Hydraulics.

- **Sanitation**

  Two hundred and fifty communal latrines will be constructed. Appropriate technologies will be introduced to improve sanitation in villages that have acquired a clean water source. The Ministry of Health will provide health education using rural radio stations and other local resources.

- **Environment**

  Gardening and reforestation will be promoted through establishment of 10 nurseries for tree-planting and 250 community gardens around the water points.

No financing has yet been found for the proposed project, which UNICEF views as the complement and continuation of the recently terminated GRB/USAID/UNICEF Project. Funds allocated from UNICEF general resources will permit execution of approximately 100 wells in 1991, of which 28 have now been completed, as well as to reinforce health education and Guinea worm prevention activities. Peace Corps/Benin will collaborate in this program and has already assigned 13 volunteers.

6.3 Dracunculiasis Eradication

In April 1991, the Executive Board approved and funded the 1991-1994 UNICEF/GRB Benin Guinea Worm Eradication Program for $2,175.000. The purpose of this project is to reduce the number of dracunculiasis cases to 50 percent of the 1988 level by 1992, and to 10 percent by 1993, with 100 percent reduction by 1995, and eradication to be certified in 1998.

The main strategies include:

- Integration of health-education and community mobilization activities with water-supply interventions;

- Development of capacity for epidemiological surveillance through strengthening an in-country Management Information System at national, provincial, and district levels, and reinforcing supervision and training at central and local levels; and

- training of endemic villages identified in the national Guinea Worm Survey to monitor and prevent dracunculiasis. Priority will be given to areas and villages of high endemicity, in order to rapidly reduce the number of cases.

6.4 Other Interventions in the Sector

The following proposed activities are those for which we have received some information. This may not be a full list of what is envisaged, and the information may need to be further verified.

6.4.1 BOAD Project

Located in Atacora Province, this project had executed 185 positive boreholes by June 1991. Priority was given to villages with endemic Guinea worm in the Districts of Bokoumbe, Cobly, and Materi. Another drilling campaign planned for the last quarter of 1991 is expected to execute 65 positive wells, and the presence of endemic Guinea worm will be a criterion for village selection.

6.4.2 Japanese International Cooperation Agency (JICA) Project

The main objective of this project is to rehabilitate boreholes, changing pumps where necessary in the southern part of Zou Province. The project is scheduled to begin in 1992, but the Directorate of Hydraulics is concerned about the proliferation of different types of pumps. They are currently carrying on discussion with JICA relative to using the India Mark II instead of Japanese pumps. It would be worthwhile for all participants in the water-provision sector to support this sensible GRB posture.

6.4.3 Global 2000 Project of the Carter Center

The U.S. corporation American Cyanamid has donated to the Carter Center's Global 2000 Project its Abate product, needed for chemical treatment of infected water points in highly endemic areas. Material for monofilament nylon filters, also donated through the Carter Center, will be provided to the Ministry of Health for distribution in Guinea worm-endemic villages. Material for approximately 90,000 filters will be donated during the program.

However, material donated to the Ministry of Health to fabricate 18,000 filters has still not been freed from Customs.

6.4.4 FED Project

The FED project is expected to rehabilitate 500 "modern" water points, render 50 traditional water points potable, and execute 70 new boreholes. Prevalence of Guinea worm disease will be a criterion for priority intervention.

6.4.5 Peace Corps

Since January 1990, the Peace Corps has assigned a total of 13 volunteers to the Guinea worm eradication program. In June 1991, a Memorandum of Understanding between UNICEF/Benin and Peace Corps/Benin sought to promote collaboration between the two organizations in their joint effort to assist the Government of Benin in the eradication of Guinea worm. A requested number of PCVs are expected to be assigned to the UNICEF program every year. Their intervention will be primarily in the areas of health and hygiene education and village-based epidemiological surveillance.

Annex 1. Assessment Team

1. James Collbran

James F. Collbran, international development and training consultant, is a specialist in sectoral planning and assessment, and in project design, administration, and evaluation. He is experienced in training and human resources development and integrated rural development, with emphasis on community mobilization, participation, and programs promoting youth and women. He has a bachelor's degree in Sociology from the University of California, a master's degree in International Relations with emphasis on development economics from Johns Hopkins/SAIS, and is proficient in French.

2. Michel Saint-Lot

Michel A. Saint-Lot is trained in engineering; social planning and energy policy; water and sanitation; and environment and health. Proficient in the use and applications of microcomputer technologies, he has assisted in the development of UNICEF's capabilities in Geographic Information Systems, and in design of the Management Information System for proposed UNICEF use in dracunculiasis eradication. He was a Parvin Fellow in Development Studies at Princeton's Woodrow Wilson School of International Affairs and is proficient in Creole, French, Spanish, and English.

3. Harvel Sebastian

Harvel Sebastian, social anthropologist and development planner, has designed and evaluated projects in 13 African and several Caribbean countries. She has worked in water and sanitation, health and family planning, slum upgrading, agriculture, integrated rural development, women's projects, rural roads impact, refugee rehabilitation, disaster management planning, and several other sectors. She has a bachelor's degree in Anthropology from the American University, Washington; a Certificate in Francophone Third World Studies from le Centre des Hautes Études sur l'Afrique et l'Asie Modernes (CHEAM), Paris; and a master's degree in Anthropology from the London School of Economics, University of London. Proficient in French, Spanish and English, with some Arabic, Ms. Sebastian served as team leader for this assessment team.

Annex 2. Itineraries

The team arrived in Cotonou Saturday morning, June 15, 1991, and was given a familiarization tour of Cotonou Sunday, June 16, by the UNICEF Project Chief of Party.

The team's schedule was as follows:

June

17 Courtesy and check-in visits with the Acting Director of Peace Corps/Cotonou (the Director was in Niger) and the Associate Director for Programs; the Director of the Bureau of Hydraulics in the Ministry of Transport; the National Coordinator for the Rural Water and Sanitation Project and for the GWE program; the UNICEF Resident Representative, Mr. Samake; and the Ministry of Health's Director for Hygiene and Sanitation.

In the evening, Ms. Sebastian met with the U.S. Ambassador and team members met with Mr. Defay and Ms. Laurin of PRAGMA.

18 The full team traveled to Bohicon Project headquarters and met with the UNICEF and GRB Project teams for first orientation. The evening was spent with PRAGMA's Ed Aldrich.

19 Field visits all day.

20 Team members interviewed Project team members individually; met with Dr. Hector Izurieta, Director of the Benino-Swiss Project in Ouesse District of Zou Province; assessment team meeting; and made an additional field visit.

June

21 Meeting with all affected Peace Corps volunteers, followed by individual interviews.

22 Returned to Cotonou and team members met with Mr. Yellot, ex-PRAGMA/Project Senior Technical Advisor, who was in from Lomé briefly; Ms. Sebastian met with Ms. Laurin and Mr. DeFaye of PRAGMA.

Team members had individual schedules during the week beginning June 24.

Mr. Collbran's schedule

24 Went to Bohicon and met with Project technical team.

25 Went to Dassa with technical team and met with district team; met with VSHDC in village.

26 Went to Save for meeting with *médecin chef*; returned to Bohicon for further meetings with technical team in the evening.

Mr. Saint-Lot's schedule

24 Met with Messrs. J.P.Meert, UNICEF Chief of Party, and Bassen Aloise, UNICEF Administrative Officer.

25 Met with Mme. Martine Covey, Ministry of Plan; Mr. Mark Wentling, Director, USAID/Lomé; and Mr. Magloire Bienvenu of MSP:DILAMB.

June

26 Went to Bohicon.

Ms. Sebastian's schedule

24 Met with Mr. J.P. Meert, UNICEF Chief of Party.

25 Had separate meetings with Mme. Covey, Ministry of Plan; Mr. Wentling , USAID/Lomé; Mme. Nassirou, Program Director, Ministry of Social Affairs, and Mr. Dovi, Social Worker Trainer; and Dr. Oussou, Director for Health Education, Ministry of Public Health.

26 Went to Bohicon.

26-27 The full assessment team continued to interview members of the Project team in Bohicon and environs, and returned to Cotonou late on June 27.

28 A planned Interagency Working Meeting was canceled because four crucial members were unavailable.

The team interviewed briefly in UNICEF, held a team meeting, and began to develop the final report.

29 The full team met with the A.I.D. Benin Country Program Development Team, in Cotonou from Washington.

Time was spent firming report outline, schedules, and deadlines, and planning the final debriefing. The team reviewed the mission to date.

29-30 Began writing report.

July

1-4 Team meetings and report writing. Ms. Sebastian met informally to brief Project principals individually. Ms. Sebastian met to brief Ambassador Isom.

Ms. Sebastian met with Mr. Bassene, UNICEF Administrative Officer.

Ms. Sebastian met with Mr. Ngokwey of UNICEF and a group of sociologists and anthropologists from the University of Benin at Cotonou.

Team members met Tuesday, July 2, and Thursday, July 4, to prepare a formal debriefing session and write issues presentation.

5 A formal debriefing session was held with all concerned agencies participating.

Ms. Sebastian met for a final wrap-up with Mr. Samake, UNICEF Country Representative.

Team members met to discuss the morning debiefing session, prepare conclusions and recommendations, and rewrite parts of the report.

6 Departed on Sabena Airways.

Annex 3
People Contacted by the Assessment Team

AGBAGNILOUE, Fidel	Department of Hydraulics Administrator
AFFOGBOLO, Adrien	Director, DGSA, Ministry of Public Health
ALDRICH, Edward	PRAGMA/USAID Administrator, GRPB/USAID/UNICEF Rural Water Supply and Sanitation Project
D'ALMEIDA, Roger	Peace Corps Program Coordinator, Cotonou
AUSTIN, John	AID/R&D/Health
BASSEN, Aloise	Administrative Officer, UNICEF/Benin
BIENVENU, Houssou	Ministry of Public Health
BIENVENU LEGONOU, M.	Directorate of Bio-Medical Analysis Laboratoty (DILABM), MSP
BOONE, David	Peace Corps volunteer assigned to UNICEF for Guinea worm
BRACEFUL, L'Tonya	Peace Corps volunteer assigned to UNICEF to work on Guinea worm

CAMARA, John	Peace Corps volunteer, USAID Project, Water/ Sanitation, Pump Maintenance/ Repair
CARTER, John	Peace Corps Director, Cotonou
CHAUDANSON, Henri	Master Driller, UNICEF/Benin
CONNOLLY, Robert	Peace Corps volunteer, USAID Project, Water/Sanitation, Pump Maintenance/Repair
COSSME, Bodjrenou	Directorate of Social Affairs
COVI, Mme. Martine	Coordinator for External Aid, Ministry of Plan
CRECEL, Michel	Project GRPB/USAID/UNICEF Supervisor, Health Education
DEFAYE, Jacques	President, PRAGMA Corporation

District Team Members, Dassa

HOUESSOU, Honore	Supervisor, Ministry of Social Affairs
HOUECHOUANOU, Mme. Leontyne	Ministry of Social Affairs
AGOSSADOU, Valentin	Ministry of Health
DJIKPO, Firmin	Ministry of Health
DOSSOU-GBETE, Theophile	Ministry of Health, Sanitation
DOSSOU-GOIN, Leon	Ministry of Health, Sanitation

District Team Member, Save

DAGAN, Isaac	Ministry of Health, Supervisory Aide

VSHOC. Logozohe/Dassa District

TEHAO, Mme. Albertine	
KONSA, Mme. Dehre	
ANANOU, Mme. Rose	
DANVIDE, Bertin	UNICEF Program Assistant

DOSSOU-YOVO, Julien	National Project Coordinator, GRPB/USAID/UNICEF Rural Water Supply and Sanitation Project, and National Coordinator for Guinea worm Eradication
DOVI	Section Chief for Social Workers, Ministry of Social Affairs
EHMER, PAUL	HPN Officer, USAID/Lomé (by telephone from Lomé)
EKSTROM, Jim	Peace Corps, Chief of Operations, OTAPS, Washington, DC
ELIJAH, Rochelle	Peace Corps volunteer, assigned to UNICEF for Guinea worm
FRITZ, Emma	Peace Corps volunteer, assigned to UNICEF for Guinea worm
GIBSON, Ruth	Peace Corps volunteer, assigned to UNICEF for Guinea worm
HAFNER, Craig	Deputy Director, WASH Project

HOUNKONNOU, Victor	Epidemiologist, Dracunculiasis Eradication Program, seconded from ISBA[14]
HURLBUT, Stephen	Peace Corps Assistant Director, Cotonou
ISOM, Amb. Harriet W.	U.S. Ambassador, Cotonou
IZVRIETA, Hector	Benino-Swiss Health Program Director
JUALL, Scott	Peace Corps volunteer, assigned to UNICEF for Guinea worm
KILLIAN, Richard	Director, Health Division, PRAGMA Corporation, Washington, DC
KONA, Mere	Head of Hydraulic Services, Ministry of Equipment; Departmental Supervisor, USAID project
KPINSOTON, Gabriel	Project GRPB/USAID/ UNICEF Sanitation Supervisor

[14]Institut des Sciences Biomedicales Advancées, Section Maladies Hydriques

LARSSON, Robert	Former UNICEF Sanitary Engineer in the GRPB/USAID/UNICEF rural-water supply and sanitation project, currently UNICEF Guinea worm Eradication Regional Coordinator, Lagos, Nigeria
LAURIN, Evelyne	Health Education Advisor, PRAGMA/MCD, Acting Project Manager
LIEBLER, Claudia	Team Planning Consultant, WASH Project
LONG, Dennis	A.I.D./R&D/Health
MEERT, Jean Pierre	UNICEF Chief of Party for Rural Water and Sanitation Project, Hydrogeologist UNICEF/Benin
MEGNIZOUN, Ange	MTAS Departmental Supervisor, Project USAID; Sanitation Supervisor
NASSIROU, Mme Ashiata	Ministry of Social Affairs, Program Director
NGOKWEY, Nbolams	Program Coordinator, UNICEF/Benin
ONIKPO, Dr. Faustin	Chief Medical Officer, Save

OUSSOU, Dr. Bienvenu	Director for Health Education, Ministry of Public Health
PANCZYK, Ray	Peace Corps, Director, Program Support Division, OTAPS, Washington, DC
ROCHEFORD, Margy	Peace Corps volunteer, assigned to UNICEF for Guinea worm
SAMAKE, Charles	Country Representative, UNICEF/Benin
SANDBERG, Jack	Peace Corps volunteer, assigned to UNICEF for Water/Sanitation/Construction
SCHERER, Nancy	Peace Corps volunteer, assigned to UNICEF for Guinea worm
STANZICK, Karl	Peace Corps volunteer, assigned to UNICEF for Guinea worm
SULLIVAN, Peggy	Vector Biology and Control Project, Washington, DC
SZAK, Kristin	Peace Corps volunteer, assigned to UNICEF for Guinea worm Program
TAPMAN, Erica	Peace Corps volunteer, assigned to UNICEF for Guinea worm

THOMAS, Chris	Peace Corps volunteer, Water Sanitation
TOMEMOU, Emil	Directorate of Hydraulics, Works Officer
TOUPE, Andre	Director, Department of Hydraulics, Ministry of Equipment

VSHDC, Houecle/Dassa District

AYEDA, Adam	President
DJODJOUMI, Mme. Colette	Health Agent
EDJICAWI, Louis	village elders, VSHDC advisors, and members of the community
AYEDA, Claude	
AYEDA, Alexandre	
AYEDA, Agnes	
SA, Ramata	
AYEDA, Delphine	
AYEDA, Azousodou	
AYEDA, Juliette	
TCHOBI, Madeleine	
ABONGO, Elyse	
AYEDA, Odette	

AYEDA, Brigitte	
WENTLING, Mark	USAID/Togo-Benin, Director
YELLOT, Lee	PRAGMA, former Senior Technical Advisor and Project Manager

Debriefing Participants
July 5, 1991

Assessment Team Members

COLLBRAN, Jim
SAINT-LOT, Michel
SEBASTIAN, Harvel

UNICEF

MEERT, Jean Pierre
DANVIDE, Bertin
NGOKWEY, Nbolams

Ministry of Labor and Social Affairs/Directorate of Social Affairs

DOVI, Paul
NASSIROU, Ashiata

Ministry of Equipment and Transport/Hydraulic Directorate

TEMENOU, Emile
DOSSOU-YOVO, Julien

Ministry of Planning

COVI, Martine

USAID/PRAGMA

LAURIN, Evelyne
ALDRICH, Edward

Ministry of Public Health

AKOWANOU, Emile
YADOULETON, Malomon Jean

Peace Corps

CARTER, John

Annex 4
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2. UNICEF, MET, MSP. Situation Epidemiologique du Ver de Guinee en Republique du Benin: Rapport de l'enquete nationale sur le Ver de Guinee. Fevrier-Juin, 1990.

3. Rapport prepare pour l'UNICEF/Togo. par Michel Saint-Lot. Technologies de l'eau, de l'assainissement et de l'environnement au Togo. Decembre 1989.

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5. Revue du Programme d'Hydraulique Villageoise et Assainissement Assiste par l'UNICEF en Republique Populaire du Benin. Dr. Joseph Christmas. Mars 1987.

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10. UNICEF/Republique Populaire du Benin. Plan d'operations du programme de cooperation 1985-1988.

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12. UNICEF/Cotonou, Benin. Quarterly progress reports, Benin-Rural water supply and environmental sanitation. Progress report # 1 (March 12 - June 11, 1986) and progress report # 2 (June 12 - September 11, 1986).

13. UNICEF/Cotonou, Benin Annual progress report.

14. J.P. Meert. Draft Final Report.

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3. Annex I of above, the Amended Amplified Project Description.

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1. Ministère de l'Equipement et des Transports. Plan nationale de lutte pour l'elimination de la dracunculose en Republique Populaire du Benin. Juillet, 1989.

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4. Republique Populaire du Benin, Ministère de l'Equipement et des Transports.

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12. Rapport d'activité #7, Juillet 1989.

13. Rapport d'activité #7, Juillet 1989.

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3. Project Implementation Reports: April 1 - September 30, 1990, October 1, 1990 - March 31, 1991, plus total series of project reports.

4. Jose Lopez-Gastey. Rapport de Mission Volet Laboratoire Qualite des Eaux. Juillet 1990.

5. SOW pour l'étude des pratiques socio-culturelles des populations dans la zone du projet eau et assainissement-Zou nord. Draft #2, dated February 14, 1991.

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4. Rapport periodique #3 (Janvier-Decembre 1989). Janvier 1990.

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6. Rapport periodique #3 (Septembre 12, 1986 - Juillet 1, 1987).

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12. Rapport periodique #9 (Octobre 1, 1988 - Decembre 31, 1988).

13. Rapport periodique #10 (Janvier 1, 1989 - Mars 31, 1989).

14. Rapport periodique #11 (Avril 1, 1989 - Juin 30, 1989).

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16. Rapport periodique #13 (Octobre 1, 1989 - Decembre 31, 1989).

17. Rapport periodique #14 (Janvier 12, 1990 - Mars 31, 1990).

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21. Training Syllabi, Manuals, and Sessions-Plans on Health Themes: Guinea worm Prevention; Potable Water; Evacuation of Excreta; Personal Hygiene; and Domestic Hygiene.

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24. Training Materials:Village Socio-Health Development Committees: Creation and Development. Vols I and II.

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Annex 5. Maps, Charts, and Photographs

1. Map 1: Benin Administrative Subdivisions, showing Provinces and Districts.

2. Map 2: Benin Health Services Infrastructure. (Supported by World Bank and Swiss Development Agency.)

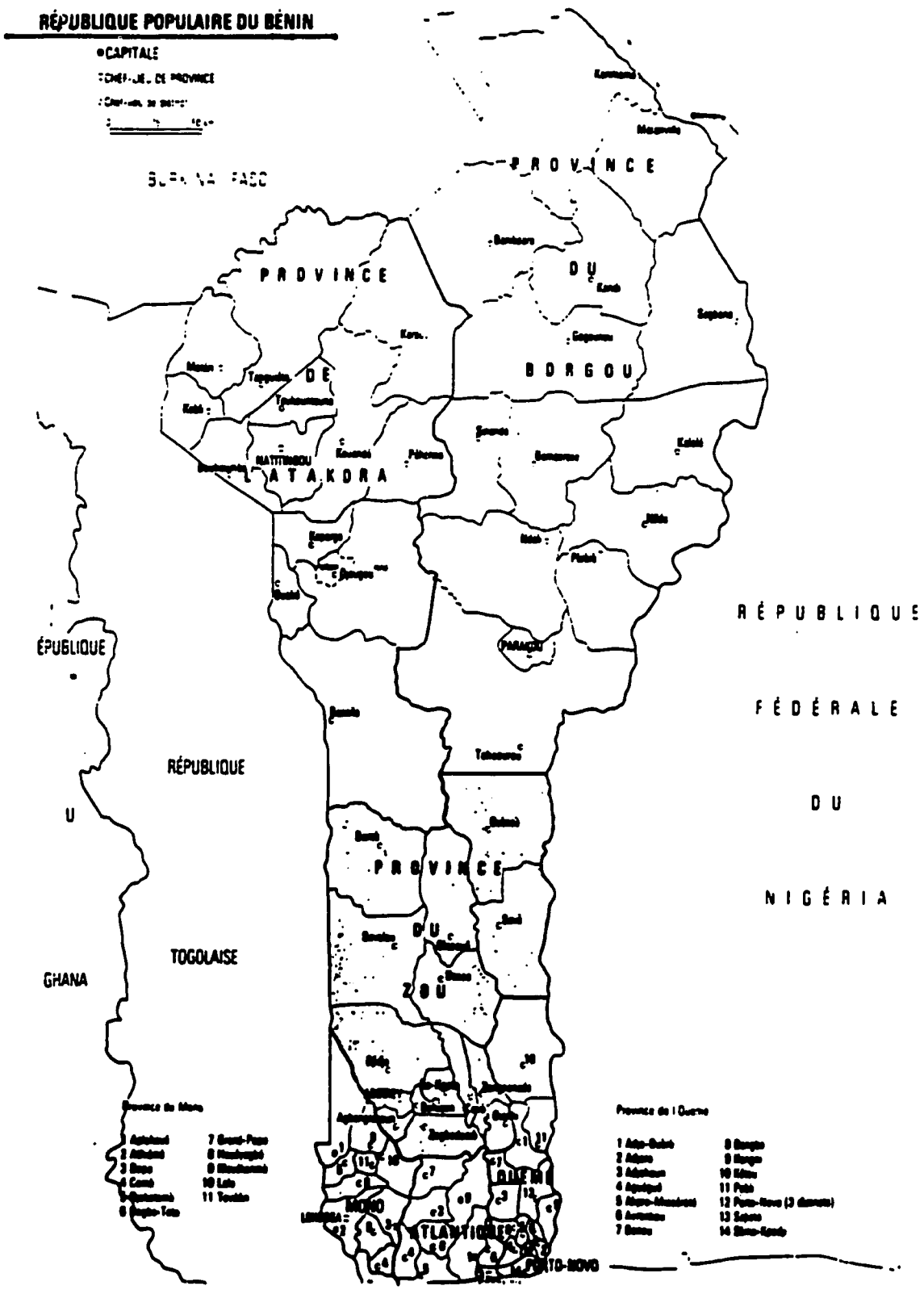
3. Map 3: Department of Zou.

4. Figure 1: Existing Organizational Chart of the Ministry of Public Health. Note: The MSP is currently being reorganized.

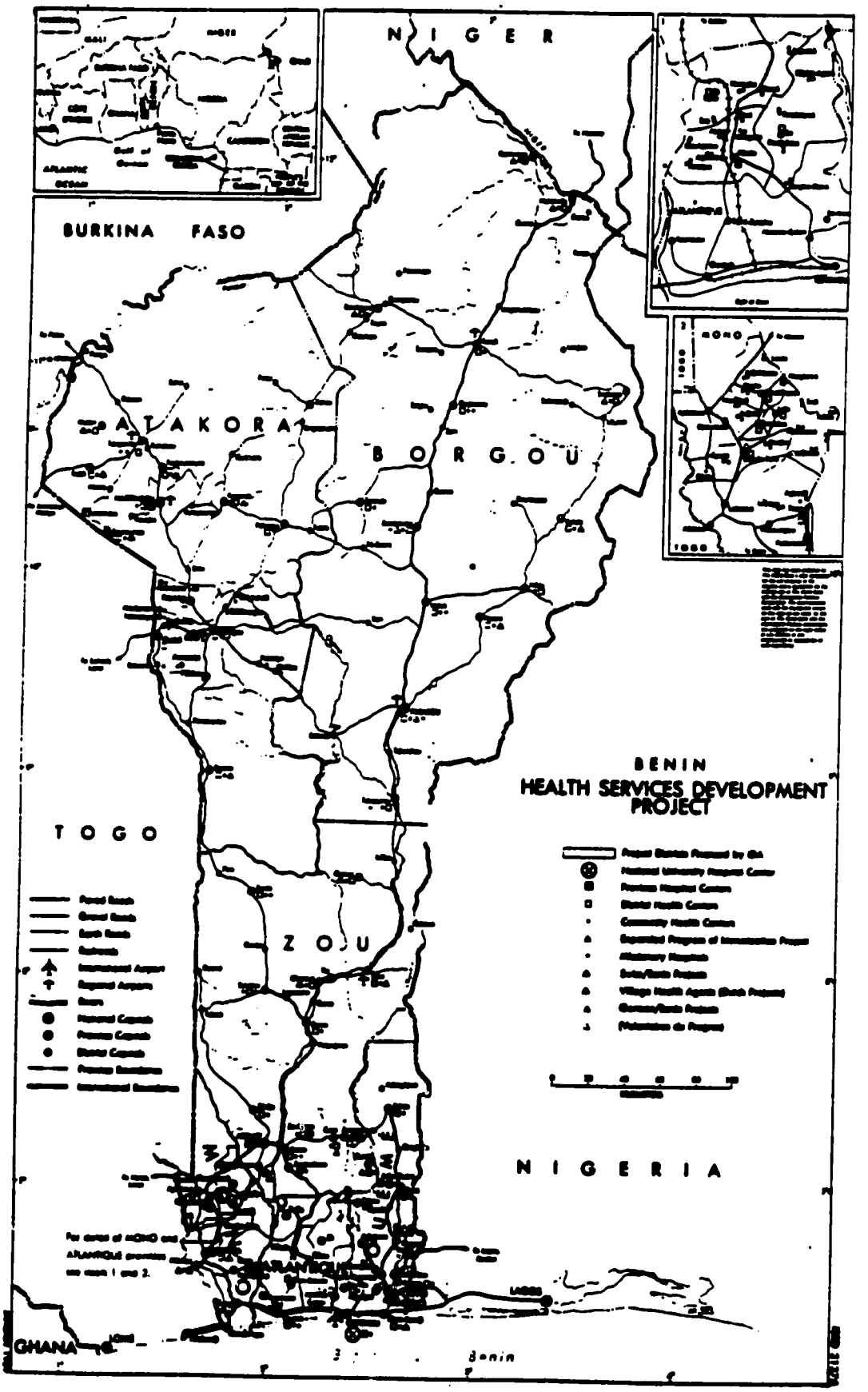
5. Photograph 1: Village Committee.

6. Photograph 2: Project Team and Assessment Team at the Headquarters Conference Room, Bohicon.

Map 1. Benin Administrative Subdivisions



Map 2. Benin Health Services Infrastructure



Map 3. Department of Zou

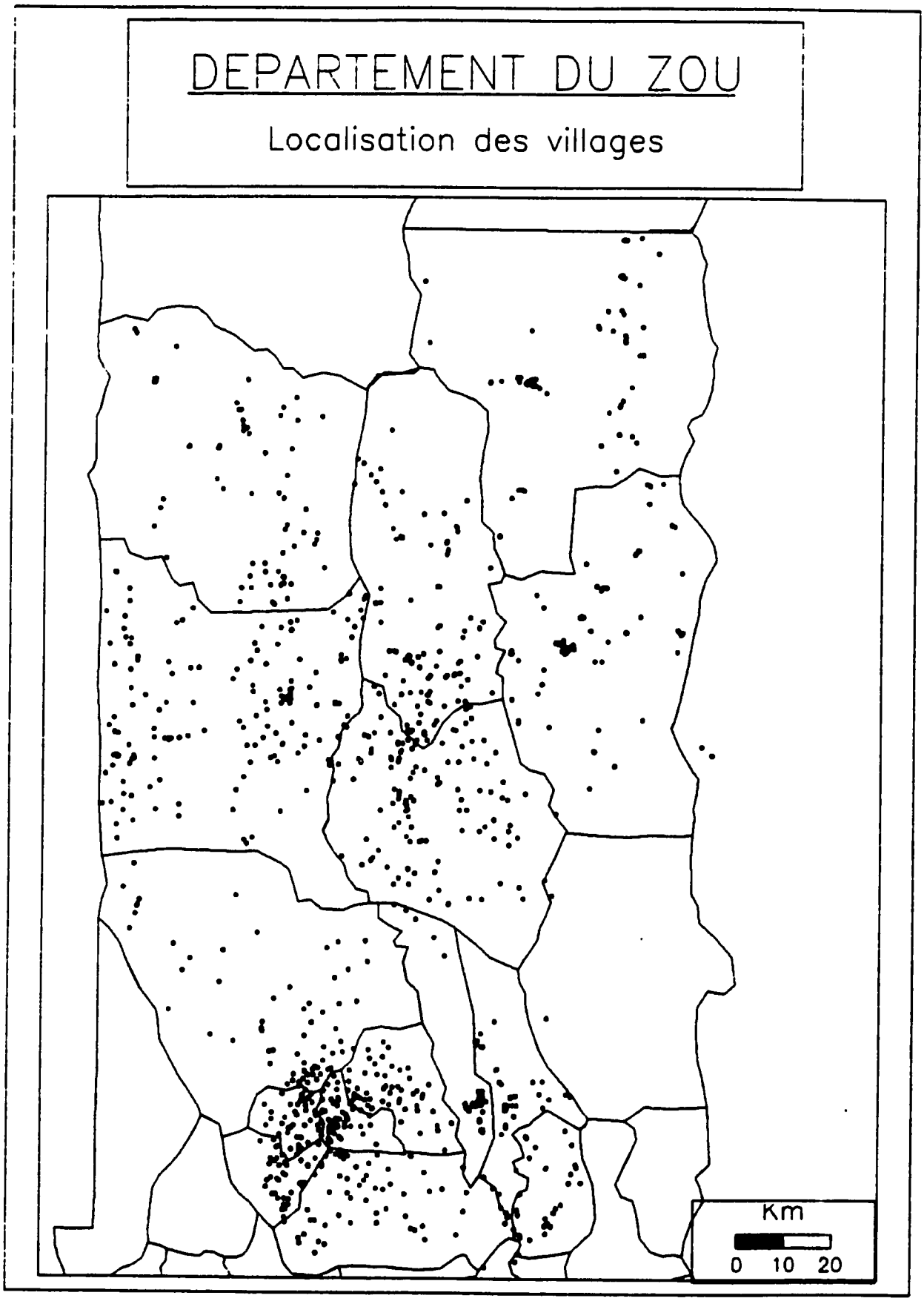
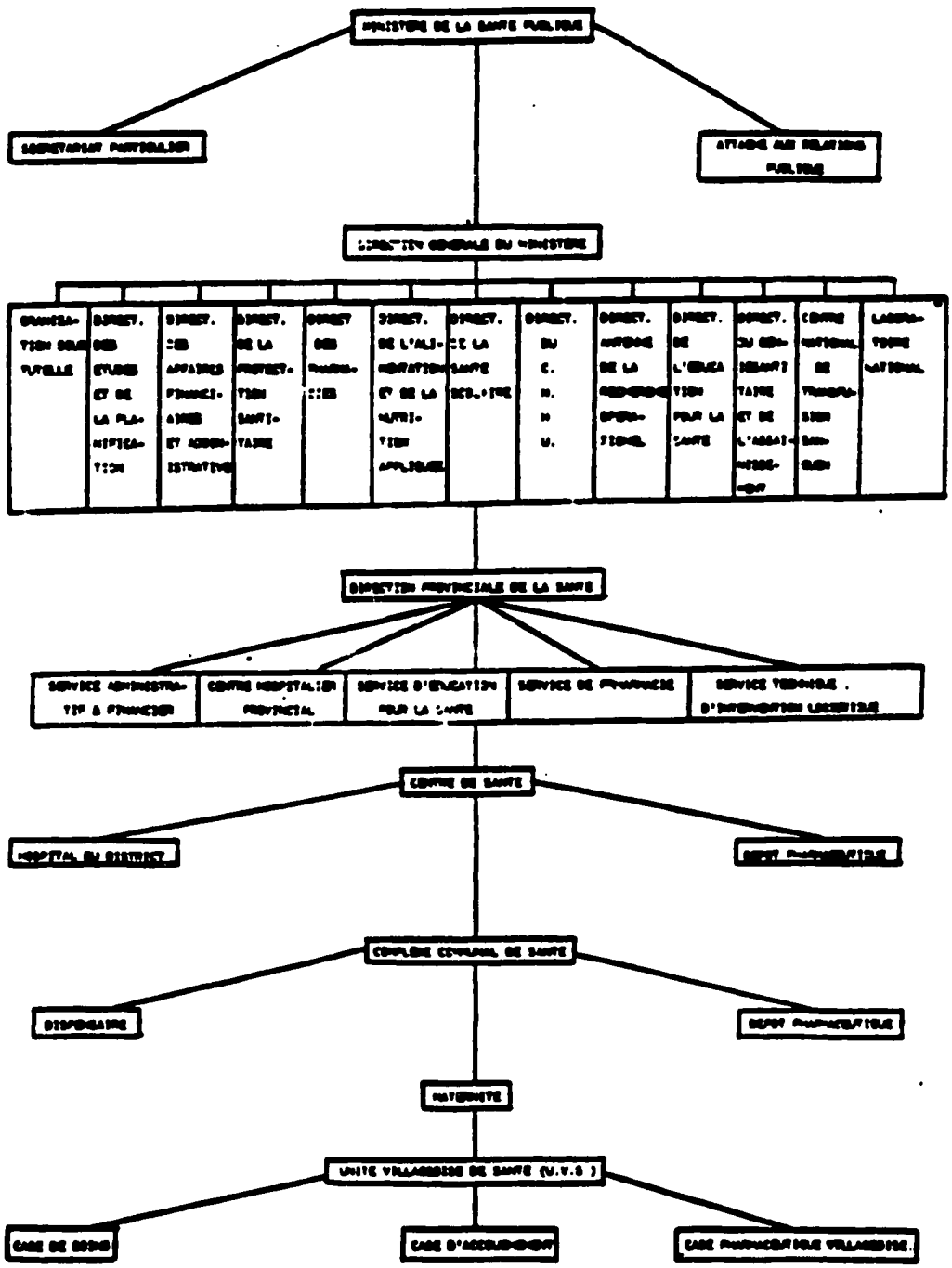


Figure 1
Existing Organizational Chart of the Ministry of Public Health*



* Note: The MSP is currently being reorganized.

Village Committee

Project Team and Assessment Team
at Bohicon Headquarters