[External evaluation of World Vision International's Ghana Rural Water Supply Project]

World Vision International
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SUMMARY OF FINDINGS

HARDWARE FINDINGS:

Overall Findings:

The well drilling is proceeding competently and on target, in conditions which are far from easy. Communities being adequately prepared before drilling starts, and adequately nurtured after the pump is installed.

The sanitation programme is proceeding less satisfactorily; not only is progress slow, but the latrines currently being built by participating communities are technically inadequate. The evaluation has found that the communities are prepared to take action to improve their environmental health; thus more rapid progress should be able to be made when the current design inadequacies are resolved.

Well Drilling Equipment:

* The equipment in use is suitable.

* The rigs have performed well in various geological formations.

* A third rig has been purchased as backup; it has not yet been put into use.

* A hydro-fracturing unit has also been purchased in order to increase water yields of low-production wells, and is waiting testing.

* Repairs of drilling equipment have been few. Present equipment is adequate for another 5 years of drilling after the end of Phase Two operations.

Location of Wells:

* The GRWP has been relatively successful with a 56% success rate in terms of wet wells; the rate of success has been showing slow but steady increases over the last year.

* To date: 202 wet wells
  158 dry holes
  360 total

* The incidence of dry wells could possibly be reduced by geophysical surveys. (Survey equipment has yet to be purchased as per 11/89 Evaluation recommendation).

Pumps and Spares:

* For the present time, the India Mark II hand pump is satisfactory and meets with Ghana Water and Sewage Corporation approvals.

* Stainless steel pipes are now in use in all project communities, thereby eliminating the iron taste and discoloration.

* Pump breakdowns have been few. Repairs, with a few exceptions, have been generally made without delay.

* WV has yet to put in place a spare parts supply system at the District levels (the Government had accepted responsibility for this but had not yet acted on their commitment).

* Meanwhile, spares are procured by the GRWP Purchasing Unit and stored in the GRWP warehouse facilities in Accra.

* Delays in the procurement of pumps and pump parts from India has on occasion hampered program implementation and caused discouragement in communities and among WV staff.

Training of Pump Maintenance and Repair Volunteers:

* GWSC policy emphasizes pump maintenance at the community level.

* Volunteers have been trained in nearly all project villages that have hand pumps.

* More than two pump maintenance and repair volunteers must be trained in each village. Volunteers must train others. This is not happening.

* Women have not typically been included in pump maintenance and repair; this is unfortunate.

* Not every village has been supplied with a 19mm combination spanner and grease required for pump maintenance.

Water Availability and Accessibility:

* Despite the drilling of GRWP boreholes, many target communities within the districts still are without a sufficient supply of potable water.

* Alternative water sources are being identified for villages where borehole water has not

community development process.

* Acquifer recharge is not likely to be a problem, but needs to be spot-monitored in dry season.

Sanitation Facilities and Latrines:

* Present latrine construction deficiencies need to be addressed.

* Greater understanding of latrine design principles is required by WV Latrine and Laundry Construction staff, as well as the communities.

* Confusion exists over the role of WVG in latrine construction; is WVG's role that of facilitators and trainers only, or of constructors and providers of latrines?

* Wells do not have adequate drainage and soakaways.

* Laundry facilities have not been constructed in most villages.

SOFTWARE FINDINGS:

Overall Findings:

A viable Health Education/Community Participation strategy has emerged from practical experience and is working. This strategy is laying a sound foundation and window of opportunity for future community development. There are beneficial impacts in terms of health and hygiene, as well as unintended consequences in terms of population growth rates and increased stress on the environment.

Impact of Program on Communities:

* The provision of clean borehole water, accompanied by health and sanitation, has significantly improved the health and quality of life in the project communities.

* The following were noted:

  . Decrease in water borne diseases
  . Increase in the use of water for personal hygiene
  . Improved "family" relationships -- women less weary, spending more time at home
  . Increased school attendance -- less illness
  . Impetus for adult literacy

* Clean water has heightened community expectations, aspirations, and self-reliance.

Community Participation:

* Community participation is extensive in all areas of project implementation.

* Communities have contributed significantly to the project in terms of materials, labor, land, financial contributions, and local knowledge.

* The GRWP is shifting its emphasis from being a provider of services to being a catalyst for community organization; this is encouraging.

Community Water and Sanitation Committees:

* Water and sanitation committees have been partially effective in mobilizing communities.

* Functional literacy, accounting, and record keeping training are needed to render the committees fully effective.

* The committees are in general providing effective structure and support for:

  . Community labor contributions
  . Financial levies to support the cost of well maintenance and repair
  . Supervision of well and sanitation facilities
  . Maintenance of the well and sanitation facilities

Health and Sanitation Education:

* The HE/CP team serves as an effective catalyst in the promotion of improved community health education.

* Health education must be intensified if the momentum achieved under the GRWP is to be sustained.

* Primary and middle schools, Traditional Birth Attendants, and District health officials represent underexploited means to provide health and sanitation training to teachers and community leaders.

* Illiteracy, particularly among women, prevents the rural population from taking full advantage of the health education and community participation opportunities available to them through this program.

* The HE/CP team will be over-extended by the time the GRWP reaches the 300-400 wet well level. Pre-drilling and post-drilling demands on the HE/CP will be overwhelming. The team ought to be enlarged in advance of this situation.

Gender Issues and Development:

* The HE/CP team has been effective in eliciting women's involvement in nearly all phases of project activity.

* Nonetheless, women do not typically have adequate opportunity to provide meaningful input in village decision-making.

* WV is accepted by the communities as an agent of change, and has a significant role to play in promoting the role of women in the community development process in the villages of this involvement.

* The overall development process would benefit by the adoption of the following targets:

  . Equal number of women as men trained in pump maintenance and repair
  . Increased female representation on the Health and Sanitation committees
  . Majority of young women in target communities functionally literate

Community Organization and Structures:

* There is some evidence of cooperation among the GRWP, traditional community structures, and government as well as non-governmental organizations.

* The following was noted:

  . District workshops with all or almost all stakeholders participating
  . Support of the Paramount Chief and village chiefs
  . Collaboration with the Holy Family Hospital
  . Cooperation and affirmation by the SMA mission

Religious Beliefs and Cultural Practices:

* The GRWP strategy in general builds on indigenous knowledge, customs and practices:

  . Community assemblies as forums for local decision-making
  . Communal labor
  . Community levies
  . Traditional latrine use

* There is no major common belief system among communities, or between WV and the communities.

* There needs to be an engaging, reciprocal learning relationship across cultural and religious lines if WV is to be involved in a dynamic process of values formation.

Indirect Consequences of the Program:

* There is evidence that the provision of water has led to a significant population increase in GRWP-assisted communities, due to:

  . Increased number of births
  . Increased in-migration
  . Reduced infant mortality

* Communities are therefore likely to become more concentrated and permanent, thereby intensifying the pressure on the limited carrying capacity of the land.

* Population growth will aggravate deforestation and soil depletion.

* Water has led to greater exchange between those in the rural communities, and friends and family members living in the urban areas. Such exchange may introduce urban problems to community life (including AIDS and STDs).

MANAGEMENT FINDINGS:

Overall Findings:

Generally-speaking, the project is on target and in compliance with grant stipulations. Internal controls are well-established, grant accounting is reliable, local procurement has been trouble-free, staff are competent, morale is high, the structure is appropriate, funding is assured, and official relationships are solid.

There are a few trouble spots requiring management attention, but none that have not already been mentioned elsewhere.

Grant Compliance:

* The GRWP is on target in spending, ahead of target on drilling and community preparation, and behind target on community follow-up (especially latrine construction and development of alternative water sources where wells were dry).

* If "community education" is to be expanded to include literacy (training of trainers) as a precursor to sponsorship-funded development, the donor's understanding and agreement will be required.

* The clause in the contract reading "KVIP or equal" as a standard for community latrines is somewhat ambiguous and requires clarification with the donor. The GRWP has been assuming that the term refers not to type of construction but to standards of hygiene,

odor and utility.

* The iron removal plant, while not yet operational, so far has not been needed to correct the problem of high iron content affecting some wells. The use of stainless steel pipes in aggressive water areas seem to have taken care of the problem.

* The plan to have the Government establish District pump maintenance stations needs revision, in light of the new Government strategy favoring the privatization approach.

* A more permanent method of marking the unique well number is required (shallow cement impressions are beginning to wear away).

Grant Accounting:

* There were no adverse findings in the two annual audits performed to date; previous audit recommendations have been implemented by the GRWP, including the establishment of imprest accounts at field sites and the automation of the general ledger at the main base.

* GRWP Accounting staff are hand-carrying large sums of cash on the long journey from the main office to the field site; this is somewhat risky.

Internal Control:

* Authority limits have been properly established and 2 signatories are required on all purchase requisitions and checks.

* The procurement and stock control systems are highly professional and well-regulated.

* Management and staff are in general cost-conscious, although less costly local resources (including human resources) are under-utilised by the field site, and tele-communications are over-utilised by the main base.

Procurement Performance:

* Local procurement has been trouble-free.

* International procurement has experienced initial difficulties, resulting in one instance in 3-month down-time on one drill rig, and in another instance delays of several months in the installation of handpumps. Also, documentation difficulties have resulted in unnecessary demurrage charges.

* The foregoing had all been corrected prior to the evaluation exercise and is unlikely to be repeated.

* Trans-shipment of international orders by World Vision International Purchasing Unit via Europe, was almost invariably problematical for the GRWP, due to strikes, delays in transit, documentation problems etc.

Staffing:

* The team is staffed with competent workers; there are 88 contract and 8 seconded staff and only 2 vacancies. Morale is almost uniformly high and turnover is low. GRWP staff are highly regarded by communities and agencies with whom they work.

* Salaries have been competitive, but sudden drastic changes in the economy have indicated the need for more frequent indexing of salaries (twice-yearly vs once a year).

* The HE/CP team is currently under-staffed, and the problem will only grow over time. The Water Resources Unit is also understaffed. There is no Environmental Health professional on staff, and there is need for an additional Alternative Water Supply specialist.

* The Documentation Unit may need its own part-time graphic artist, as the artist employed by the GRWP is in great demand.

Training and Staff Development:

* The training program established in conjunction with the WV Ghana Human Resources Department is fully justified as a grant expense, as the skills being developed are appropriate for GRWP tasks.

* To date, 16 GRWP staff have benefitted from training opportunities during Phase Two (not counting drivers and clerical staff).

Structure:

* Generally speaking, the GRWP is structured appropriately to perform the required tasks; however, the Project Manager's span of control is too large at 9; much of his time is taken up in routine supervisorial duties, diverting his energies from the dry well problem.

* The Laundry and Latrine Construction Team is not funtioning well under the current structure; it requires closer collaboration with the HE/CP and closer supervision by the Technical Resources unit.

* The Water Resources Unit of the GRWP is only weakly linked to the water project at present, as most of its services are geared towards communities where the GRWP is no longer active; this linkage needs to be strengthened, as part of the Water Unit's costs are being charged to the grant.

Technical Support and Integration with the National Office:

* The creation of 4 cross-functional teams (Management, Field Operations, Sanitation, and Information Management) has significantly improved GRWP management performance.

* The Technical Services unit of the National Office is providing excellent support to the GRWP in the area of program monitoring and evaluation.

* The Human Resources Department of the National Office has provided good support to the GRWP by making training opportunities available to GRWP staff.

* It appears that neither the Technical Support Services Unit nor the Water Resources Unit "own the goal" for correcting the construction flaws of the latrines and the soakaways, and yet there are no other units within the Ghana office more appropriate to handle this function.

* Integration of the GRWP with the National Office (as recommended in the 11/89 Evaluation) is virtually complete; the new Area Development Program emphasis will require even greater integration, however.

MARKETING FINDINGS:

Overall Findings:

The GRWP has received its full allocation of funding each year from the WVUS Support Office, and the grant matching requirement appears to be within reach. The matching funds have come entirely from non-sponsorship sources, in spite of concerted efforts by both WVUS and the National Office to incorporate sponsorship funding into the program. Based on the experiences of both the Support Office and the Ghana National Office, sponsorship is not recommended as a source of matching funds in this particular grant, although sponsorship funds are highly desirable for follow-on funding in the areas now being served by the GRWP.

Match Requirement:

* Only two WV Support Offices are involved in GRWP Phase Two, compared to 5 in Phase One. This is a mixed blessing -- while communications, reporting and marketing coordination are simplified, the burden for meeting the match falls primarily on one office (WVUS); in addition, some technical backstopping has been lost.

* WVUS has raised $2.3 million of the $3.2 million match; this does not include $25,000 in interest earned, which must be added to the total grant amount.

* More than two years remain in which to raise the balance of the match; this appears to

be feasible in spite of a down-turn in the economy.

Non-Sponsorship Funds as Match:

* All of the funds raised to date are from non-sponsorship sources; the majority ($1.6 million) was raised in an appeal featuring the Hilton match opportunity, and a good portion from a share in the results of an appeal featuring several water programs in Africa ($275,000).

* The $3.2 million match requirement is a "loaded" amount (that is, it includes "ministry delivery costs" of the National and International Offices). However, it does not include an additional $800-900,000 in fundraising costs which must be borne by the Support Office.

* WV Taiwan has contributed $150,000 in non-sponsorship funds to date towards the match requirement.

Sponsorship Funds as Match:

* While sponsorship was programmed as an element of the match in all 5 years of Phase Two, it hasn't actually worked out that way.

* Sponsorship is an uncomfortable fit as a match for the grant. The burden of work on the HE/CP team to prepare new communities simultaneously for both the well-drilling operation and for sponsorship means that post-drilling follow-up is compromised.

* Because of the collapsed plans to fund a portion of the GRWP match in Ashanti using sponsorship, the National Office has collected some 2000 Child Histories and photographs which are not being used.

* If no Support Office comes forward to market these 2000 Picture Folders, 33 communities in Ashanti are doomed to disappointment this year unless the GRWP budget can accomodate some of the promised literacy activities without raising the total match required. WV Ghana's credibility is at stake in these communities, and along with it significant development momentum may be lost if no promised activity occurs this year.

Sponsorship Funds as Follow-on:

* In Kwahu South, sponsorship was used as a follow-on to the GRWP rather than as a match; this has worked so well that the National Office has proposed duplicating that in Ashanti (where drilling is now underway).

* The Partners In Hope experiment (church-based donors) focused on Kwahu South has experienced a slow start but reported good trial results. Because of the slow start,

expansion is out of the question, unfortunately.

* Based on the operational experience in Kwahu South, however, sponsorship is considered an ideal funding mechanism for the 7-10 year follow-on which is essential to maintain momentum and maximize development gains made during the GRWP effort.

* Literacy and primary health care appear to be low-input/high-impact interventions ideally suited for sponsorship funding.

Long Range Funding Strategy:

* The GRWP is already thinking about the next 5 years, since the equipment will have at least that much more useful life left in it at the conclusion of Phase Two.

* WVG are hoping to move the operation in Phase Three to the even needier areas of the Northwest, and are hoping to attract new donors with an interest in Natural Resources Management and Primary Health Care as well as Potable Water.

PUBLIC RELATIONS:

General Findings:

The official relationships of the GRWP and the WV Ghana office are sound at every level of government, and in particular at the District and community levels. The District-level "Start-up Workshops" in particular have enabled the GRWP to establish excellent relationships with local government and traditional leaders. Relationships are also sound with international aid agencies, NGO's, and knowledge-generating institutions.

Government Relations:

* Government relations were strained during Phase One, but in Phase Two they were almost universally positive.

* In Phase One, the relations with the Government were limited to offices in the national government; in Phase Two, relationships are very strong at the District level as well as the national level, and with local traditional leadership.

* Key to the good relationships established over the last two years is the practice of involving all stakeholders in a one-week "Start-up Workshop", as well as a series of shorter follow-up workshops during the period of GRWP involvement in the area.

* Some of the commitments made by participants in the Start-up Workshops, especially government agencies, have not been fulfilled. This may be because commitments were

made without adequate prior coordination.

* The Protocol with the Ghana Water and Sewerage Corporation, recommended in the 11/89 Evaluation, has been written but never actually signed by GWSC.

International Aid Mission Relations:

* The GRWP is not currently receiving any government grants. Nevertheless, good relationships established in Phase One with the US Embassy have been maintained.

* The WVG team has also established good relations with other local missions by virtue of the GRWP's reputation.

* The British ODA had a misunderstanding with WVG over who was responsible for certain water-provision camps in the same Liberian refugee camp; unfortunately, this contributed to ODA's decision not to fund a grant for the GRWP. Perceptions have since been corrected by WVG and WV Britain, and the relationship may bear fruit in future.

NGO Relations:

* There are 27 international NGO's working in Ghana, of which WV, CRS and ADRA are the most visible; WVG maintains strong links to ADRA and Technoserve, and is in the process of building stronger ties to CRS, Plan International, Save the Children and Action Aid.

* Dr. Joe Riverson (WVG's National Director) was asked to chair the first meeting of the informal Association of International NGO's in Development, a group he helped to establish.

* WVG is a member of GAPVOD, an association of 70 local and international NGO's; it is represented on the Steering Committee. Relationships are cordial with most, and close with some. There have been strained relations with 2 NGOs; WV Ghana has taken initiative to heal both rifts.

* Relationships are especially strong at the grassroots level, with agencies like the Holy Family Hospital, Presbyterian Church of Ghana Water Project, The Luke Society, and SMA Afram Plains Project.

University and Research Institutions:

* WVG has facilitated a 4-way collaborative arrangement among CIIFAD from Cornell University, the University of Ghana, the GOG and World Vision which is proving beneficial to all parties and the GRWP in particular:

- Two CIIFAD consultants participated actively in the GRWP evaluation
- A third CIIFAD consultant provided key training in sustainable development to GRWP staff as well as others from the West Africa Region.
- A Cornell doctoral candidate has been working with WVG on a survey of indigenous agricultural knowledge and practices.
- The University of Ghana and WV are teaming up to produce a course series which would be of benefit to NGO staff development needs.

* WVG has been making good use of contacts in the University of Ghana and the Kumasi University of Science and Technology:

  - Each contributed a professor to the evaluation team.
  - Several training sessions have been organized by these institutions for the benefit of GRWP staff.
  - Opportunities for further collaboration and information exchange are being pursued.

* A more recent collaboration which appears likely to bear fruit involves the Desert Research Institute of Nevada. They wish to work with WVG in identifying ground-water using remote sensing technology.

* The project also has links with the Water Resources and Research Institute (WRRI). This agency is currently conducting research on a cost-effective method to remove iron from ground water; they are also performing water quality tests for community wells. WRRI has recently started collaborating with DRI.

SUMMARY OF RECOMMENDATIONS

Performance and Impact:

1. The pump components removed from the Obonyan No. 2 well should be re-installed to check on water recovery of the well for use; if the quantity is not sufficient, hydrofracturing of the well should be considered.

2. The GRWP should implement the recommendation contained in the 1989 evaluation report immediately (i.e., WVI should purchase a geophysical instrument to enhance well sitings).

3. The GRWP should hire a geophysicist to operate the geophysical instrument, especially in the areas of dry wells or ground water scarcity.

4. For communities such as Obonyan No. 2, the GRWP should return to the project area for geophysical siting and further drilling work.

Equipment:

5. The rig from Senegal should be serviced and commissioned as quickly as possible and then moved to the drilling camp in order to fulfil its role as the stand-by rig.

6. The Hydrofrac unit should be commissioned and put into service without delay.

7. Since the drilling equipment would seem to be adequate for a further 5 years of operation after the completion of the present phase, World Vision should give consideration to the future of the program after the present funding runs out.

Well Siting:

8. Where ready alternative well sites exist, wells should not be located in depressions where drainage of the pump apron will be difficult.

9. In cases where there are problems of surface drainage, the community should be assisted to construct a soakaway pit.

10. Concrete aprons need water channels for easy removal of excess water.

11. Where ready alternative well sites exist, wells should not be sited too close to contaminated traditional water sources.

Logistical and Administrative Support:

12. WVI should ensure that minimum time is spent on ordering procedures and ordered goods are shipped and delivered promptly by manufacturers.

13. WVI should computerize the existing data and information on wells and communities.

Handpumps and Spares:

14. WVI should consider ordering a few VLOM type of pumps (Afridev etc) to install for evaluation and monitoring.

15. WVI should order pumps earlier in the cycle so that in future time-delays on pump installation can be minimized to a maximum of 1 week from completion of drilling.

16. WVI should endeavour to ratify the proposed arrangement on location of pumps and their spares at the district level with the district Government.

17. The communities should be educated in the correct way of using the India Mark II handpump.

18. Since Ghana Water and Sewerage Corporation is possibly going to be at least partially privatized and the GOG is endeavoring to encourage private manufacture or importation of pumps, WVI should work to support this transition; it would seem to offer better prospects of long term sustainability.

Handpump Maintenence Training:

19. WVI should increase the number of volunteer mechanics for training from 2 to 3 and ensure that these in turn train others and so on.

20. Communities should be encouraged to have at least one woman in the initial group of pump volunteers that are trained.

21. WVI should provide the necessary sets of 19mm combination spanner and grease to volunteer mechanics at the communities to enhance sustainable maintenance.

22. The WV Ghana Handpump Training Manual should be simplified and should have more simple pictures and diagrams.

23. Until such time that a privatized system is in place, WVG should intensify its efforts to obtain the commitment of the District-level government to the storage and distribution facilities required for WV handpump and spares in the district.

Health Education:

24. Family planning education and services should be intensified.

25. In villages where the old (polluted) water source is still being used in addition to the well, further investigation should be carried out to determine the reasons and the health education curriculum revised accordingly.

26. Where communities persist in using the old source, the water committee should be encouraged to actively discourage its use -- possibly by charging fines (with proceeds going for well maintenance).

27. There is a need for a higher standard in training and spare parts inventory for areas with inadequate numbers of wells, particularly where communities are dependent on a single well.

28. Health education in schools must be intensified so that children will understand the relationship of clean water to good health, and polluted water to various kinds of diseases.

Alternative Water Supply:

29. Since information is not available on the recharge of the aquifer serving each well, it is recommended that a modest program of well-monitoring be established to ensure that any problems with the aquifers are identified at an early stage.

30. The GRWP should hire at least one additional technical staff person to be assigned to the Water Resources Unit; this person should dedicate 100% of his/her time to following up "dry" communities on-site.

31. The HE/CP team should accept responsibility for community monitoring and follow-up in "dry communities" as well as "wet" ones; this would seem to require increased staffing levels for the HE/CP team.

Latrine Construction:

32. Designs for trench latrines should be developed which feature chambers that are partially below and partially above ground, for areas where the underlying rock is too close to the surface to allow for a hand-dug pit of sufficient depth.

33. World Vision needs to structure and staff the Latrine and Laundry Construction team in such a way that timely latrine construction facilitation can be provided to the communities while they are still motivated to build.

34. The sanitation program should be designed with children in mind, as in many of the villages there is currently no latrine suitable for them; the schools should be invited to participate in designing and building such latrines.

35. The GRWP should work with its consultants to develop a series of latrine designs that will improve ventilation, reduce or eliminate the fly and odour problems, and improve access and privacy for the users -- in response to their requests.

38. The HE/CP team should intensify its facilitation of the community towards accelerated response to latrine construction; the facilitation process should include a means to capture indigenous knowledge in the area of sanitation and hygiene.

39. The Latrine and Laundry Construction crew needs to be trained to provide facilitation, training, guidance and technical support to the communities so that they can construct their own technically sound latrines.

Sanitation:

38. A technical person should be added to the Water Resources Unit (GRWP) or to Technical Support Services (WVG) to cover technical aspects of sanitation and environmental health; a public health specialist is to be preferred.

39. The sanitation monitoring function needs to be included in the position charter of either Technical Support Services or the Water Resources Unit.

Community Participation:

40. World Vision should include summaries of the HE/CP activities in quarterly reports to the Hilton Foundation so that a comprehensive picture of the total project will be provided.

41. World Vision should find ways to share what it has learned from their experiences with other NGOs and with the government, especially with the Government of Ghana's Water and Sewerage Corporation.

42. The evaluation team strongly endorses the Health Education and Community Participation components of the GRWP in both the pre- and post-drilling community intervention activities, and recommends the continuation of this effort.

43. The HE/CP team should "own the goal" of facilitating continuing contacts of various WVG units with communities and local government leaders, for the sake of continuity.

44. World Vision should continue to implement the concept of the paraprofessional as a means of ensuring continuity of community education/animation at the district level.

45. World Vision Ghana should move slowly but deliberately away from the role of service provider towards that of a catalyst for wider integrated development in the communities that have participated in the GRWP.

46. Women should be more centrally involved in all levels of the work of World Vision; this includes staff as well as program participants.

47. Community leadership should be given appropriate training in project planning, operation, management, and supervision to ensure that subsequent development efforts of the community are sustainable.

48. Understanding and valuing cultural diversity should be one of the goals of the HE/CP community-level curriculum for development committees in those areas with a high proportion of migrant settlers.

Water and Sanitation Committees:

49. The water and sanitation committees should intensify their efforts to have health education provided in schools.

50. Training in management skills and functional literacy should be provided to members of the Water and Sanitation committees, along with accounting skills where necessary.

51. Where the Water and Sanitation Committee is NOT currently represented on the Village Unit Committee, the HE/CP should work with community leaders in a sustained and patient effort to establish such representation (or viable alternative).

52. More women should be included on the water and sanitation committees.

Relationships to Traditional Community Structures:

53. World Vision should continue its collaborative approach with the various religious and political groups, as well as with traditional leaders at both the district and village level.

Educational Benefits:

54. World Vision should continue to emphasize the use of schools as a vehicle for health/sanitation/water-use, pump-use, and disease prevention.

55. World Vision should support health and sanitation education efforts with appropriate audio-visuals; examples from British WaterAid are illustrative.

Community Expectations:

56. World Vision should communicate future plans to the District Government early enough that District Development Officers can integrate these efforts with District plans and foster reasonable expectations regarding World Vision's ability to contribute financially.

57. World Vision should collaborate with District Development Officers and other NGOs active in the area in seeking major donors for specific high priority community development efforts.

Gender Issues:

58. The HE/CP team specifically should continue to encourage the participation of women in every phase of the Ghana Rural Water Project.

59. The GRWP should provide training programs with the women participants specifically in mind.

60. Women should be recruited for GRWP vacancies in technical as well as non-technical professional positions, and given priority if qualified.

61. Regular follow-up by the HE/CP team is essential in terms of women's involvement in the community development process, particularly in the planning and implementation of the laundry and latrine construction.

62. Adult literacy is a major priority in terms of enhancing the participation of villagers, for women in particular.

Environmental Sustainability:

63. The population growth in villages of Kwahu South and Sekyere West should be closely monitored, and a comparison should be made between those wherein boreholes have been provided, and those using traditional water sources.

64. An environmental education component should be added to the HE/CP primary school curriculum, in which the destructiveness of bush fires and unsound logging practices is emphasized, and environmentally-friendly alternatives are introduced.

65. World Vision should seriously consider adding a natural resources management component to their overall development strategy in the Afram Plains ADP (Area Development Program).

Grant Compliance:

67. The donor should be requested to approve in writing an extension of one year (that is, from a 5 year period to a 6 year period) for the software activities of the GRWP, affecting the matching portion of the grant only.

68. The crew responsible for preparing the concrete aprons around the handpumps should be sure to make an impression of the unique well number deeply enough to last, or else make the impression in an area unlikely to receive much wear.

69. The meaning of the phrase "KVIP or equal quality" should be clarified in writing with the donor.

70. The GRWP should maintain temporary service centers in decentralized locations, while simultaneously pursuing agreements with the Government of Ghana establishing longterm responsibility for the maintenance stations.

Grant Accounting and Internal Control:

71. The GRWP should consider the merits of opening a bank account closer to the site of field operations.

72. The GRWP Finance should examine the merits of relaxing the requirement for obtaining 3 quotes for line items totalling $100 or more.

73. The site-based accountant should more closely supervise the work of the Assistant at the field site who is charged with logging in the deliveries of supplies coming to the camp from Accra.

74. WVI Purchasing should avoid trans-shipment to Ghana through Europe, where practical.

75. WVI Purchasing should investigate the advantages of an arrangement with a cargo airline for the Ghana delivery route, rather than the passenger airlines customarily employed by the WVI Purchasing Office.

Stewardship:

76. The GRWP should conduct a cost/benefit analysis of locating staff closer to the work, versus maintaining current levels of vehicle traffic.

77. The GRWP should reexamine its staffing plan to determine whether it would be cost-effective to hire more casual laborers (short-term contracts) at the field sites.

78. The camp-based Administrator should review purchase requisitions to ensure that requested items (or alternatives) are not available more cheaply from local sources.

79. The secretarial staff should be encouraged to question the urgency of a lengthy fax (over 10 pages), or the wisdom of sending a DHL package if only one or two pieces of correspondence have accumulated for the weekly courier.

80. The secretarial staff should be trained to use WordPerfect 5.1 and send all reports destined for an external audience in this format.

Structure:

81. The Project Manager should seek to reduce his span of control to 5 or 6.

82. The Project Manager should investigate the merits of formalizing the ad hoc supervisory role of the Grant Accountant and the proposed office management role of the Documentation Manager.

83. Either the Technical Support Service Unit or the Water Resources Unit should accept responsibility for technical supervision of community latrine construction efforts.

84. The Project Manager should consider the merits of assigning 4-5 Laundry & Latrine Construction contract staff to the HE/CP, and grouping the rest of the LLC unit with the other construction functions of the GRWP.

85. The Project Manager should develop a number of options for GRWP structure with the intent of freeing up his time to focus on the problem of reducing the ratio of dry wells to wet.

86. The Project Manager should spend significantly more time in mentoring the two hydrogeologists on the Water Resources team.

Staffing:

87. The WVG AD/Human Resources should consider adding one or more mid-year reviews of the GRWP pay scale, tied to an index which accounts for the net impact of inflation rates and exchange rate differentials; several options should be submitted to WVI/HRD for comment.

88. Efforts should be made to keep the well-drilling and HE/CP teams together after the end of the current grant, so that their expertise and efficiency could be put to good use in other parts of Ghana, either under World Vision or under the auspices of some other organization.

Staff Development:

89. Since the budget cannot sustain significant inceases in training expenditures, the issue of

training expectations should be addressed appropriately by the AD/Human Resources and/or the National Director, because of its effect on morale.

90. The GRWP Project Manager should review any performance gaps revealed through this and any subsequent evaluations, and develop jointly with the AD/Field Ministries and the AD/Human Resources a cost-effective training strategy that appropriately addresses these gaps.

Documentation:

91. The format and content of the quarterly report should be reviewed with the donor, to enable the Hilton Foundation to acquire a more complete picture of project progress and obstacles; in particular, we recommend that the "software" elements of the program receive greater visibility.

92. The Project Manager should assign the Grant Accountant (who has cost accounting experience) to team up with the members of the Documentation Unit to determine where the project may be over-documented, and propose appropriate adjustments.

Integration:

93. The HE/CP unit should invite staff from the Operations Department (eg, the Ashanti Region ADP staff) to join them in their rounds, for the sake of continuity in the community after the departure of the GRWP from the area.

Marketing Strategies:

94. The idea of using sponsorship as a match for the Hilton grant should be abandoned, at least for the duration of Phase Two.

95. Where communities have been prepared for sponsorship, this should be followed through wherever possible.

96. No further communities should be prepared for sponsorship until both field office and support office considerations allow reasonable assurance that it will be able to proceed within a reasonable time.

97. For the duration of the current grant, the GRWP should work more collaboratively and proactively with the primary Support Office (WVUS) to obtain the full level of support required to achieve excellence in all project performance areas.

98. Due weight should be given by WVUS to provide additional support beyond fundraising.

99. The issue of continued funding for Phase Three should be actively pursued beginning in

FY93, with the goal of obtaining the majority of funding commitments by early FY95.

100. The GRWP and WV Ghana should energetically pursue with WVUS (and/or other Support Offices) the matter of securing on-going funding commitments to sustain a continued presence of 7-10 years in the ADP mode in those communities previously touched by the GRWP, using sponsorship as the primary mechanism, and literacy and health education as the primary interventions.

Official Relationships:

101. WV Ghana should work to achieve a realistic level of expectations for the scope of work which can be covered by WV, and to alter the prevailing image of WV as a "rich" organization.

102. Workshop participants should be made fully aware before a start-up workshop that they will be asked to make commitments for action, and time should be allowed for them to carry out any investigations they need to make realistic commitments.

103. The protocol with GWSC must be finalised and signed.

104. Efforts to build a more effective working relationship with the GWSC should continue, and remaining difficulties should be investigated further.

105. World Vision should seriously consider WaterAid's proposal to meet at quarterly intervals to exchange information and coordinate planning, as long as the two agencies have operations in the same areas; the same offer should be extended to any other agency whose operations overlap with World Vision's.

106. WV Ghana should continue pursuing productive relationships with knowledge-generating and research institutions.

EVALUATION METHODOLOGY

Dr. Robert Burke
Evaluation Team Leader

INTRODUCTION:

This section outlines the purpose of the Ghana Rural Water Program (GRWP) mid-term evaluation, describes the team composition, provides an overview of the evaluation process, and summarizes the approach to data analysis and report preparation.

PURPOSE:

The three specific purposes of this evaluation were to:

1. Determine if the GRWP is having an effective and sustainable impact on the health and the development of infrastructure of participating communities in the Greater Afram Plains.

2. Provide an overall assessment of project progress and lessons learned, and recommend program modifications where necessary.

3. Determine if the GRWP is in compliance with commitments that have been made to communities, government and donors.

TEAM COMPOSITION:

The evaluation team comprised 25 members, including 10 external evaluators, 4 local consultants, and 11 WV Ghana staff (see Attachment 1). Team leadership was provided by:

Dr. Bob Burke, West Africa Region Program Planning Advisor. Evaluation team leader, report co-editor; focus on sustainability of program impact.

Julian Pitchford, Consultant, WVUS. "Hardware" team leader; focus on technical aspects of program design, strategic directions, and lessons learned.

Dr. David Deshler, Consultant, CIIFAD and professor, Cornell University. "Software" team leader; focus on community development and impact issues.

Randy Strash, Executive Assistant/West Africa Region, WVI. "Management and Marketing" team leader, report co-editor; focus on internal management and funding issues.

PROCESS:

The mid-term evaluation was participative throughout and conducted in three phases: Evaluation Design; On-Site Data Collection and Survey of Beneficiaries; and Data Analysis and Report Writing.

Evaluation Design:

Sept-Oct. 1992	-	Preparation of mid-term evaluation draft scope of work (see Attachment 3) and circulation among stakeholders for comment.
Oct-Nov.	-	Identification of evaluation team members; preparation of terms of reference and circulation among stakeholders for comment (see Attachment 4).
Nov-Dec.	-	Finalization of scope of work and terms of reference (see Attachment 3); conduct of document research; drafting of primary needs of information and circulation among stakeholders for comment.
Dec.	-	Confirmation of evaluation team members; distribution of GRWP documentation; finalization of primary needs of information; finalization of evaluation field visit schedule.

On-Site Surveys:

The ten "external" evaluators, accompanied by the four consultants and eleven WV/Ghana staff members, spent three weeks in Ghana interviewing staff and beneficiaries, collecting data, and observing various aspects of the program:

Jan. 9 - 11, 1993	-	Evaluation design review, assignment of roles and responsibilities, sampling, logistics, and team building.
Jan. 12 - 15	-	Visit to communities in Kwahu South District. Interviewing, observation, and data collection.
Jan. 16 - 18	-	Evaluation team meeting to share data and refine tools. Survey teams reshuffled. Preparations for second week of community visits.
Jan. 19 - 22	-	Visit to communities in Sekyere West District. Interviewing, observation and data collection.

Jan. 23 - 25	-	Data tabulation and analysis. Evaluation team meeting to review general findings and explore recommendations. Report writing.
Jan. 26	-	Oral report on evaluation findings and recommendations to WV/Ghana senior management, GRWP management, Mr. Steve Hilton, and invited guests.
Jan. 27 - 29	-	Report writing. Departure of evaluation team members.

Refinement of Purpose and Scope:

The first two full days were devoted to planning and team building. Twenty-four of the twenty-five team members were present. WV/Ghana and GRWP staff reviewed the evaluation design with the evaluation team (Attachments 3 and 4). The purpose and scope of the evaluation, and primary needs for information were discussed and agreed. GRWP management briefed the evaluation team on the current status of the project.

The evaluation team divided into three groups: "Hardware" (HWT), "Software" (SWT), and "Management, Marketing & Relations" (MMR), corresponding to the three areas of evaluation emphasis, as noted below. Group leaders were named by the Evaluation Team Leader. Groups met separately to draft data collection tools and to assign individual team member responsibilities.

> "Hardware" - Borehole Drilling; Location of Wells; Hand Pump Installation; Pump Maintenance and Repair; Volunteer Training; Water Availability and Accessibility: Latrines and Laundry Facilities; etc.
>
> "Software" - Impact of GRWP on the Community; Community Participation; Community Health and Sanitation Committees; Health and Sanitation Education; Gender Issues; Community Organization and Structures; Cultural Beliefs and Practices; Indirect Consequences of the Provision of Water to Rural Communities; etc.
>
> "Management, Marketing, and Relations" - Organizational Structure; Staffing; Financial Management; Procurement; Monitoring and Reporting; Grant Compliance; Role of Sponsorship Funding; Government Relations; Donor relations; NGO Relations; etc.

Sampling:

The GRWP Phase Two has been operating in 5 Districts to date. The evaluation team elected to survey two Districts: Kwahu South and Sekyere West.

Kwahu South District was selected as it is the first District within which the GRWP (Phase Two)

had initiated drilling and health and sanitation activities. Sufficient time had elapsed to permit project impacts to be observed. The GRWP presently works in 33 communities in Kwahu South District.

GRWP activities in Sekyere West District began more recently. Sekyere West represents an extremely challenging project zone from a logistical and socio-cultural perspective. In this District the evaluation team hoped to observe GRWP pre-drilling and post drilling activities in operation. The GRWP presently works in 33 communities in Sekyere West District, although hand pumps have yet to be installed in all communities.

GRWP management provided the evaluation team a list of the ten (10) most successful and ten (10) most challenging project communities in each of the two Districts. The criteria used to determine success included: strength of health committees, level of community participation, village leadership, number of water and sanitation facilities in place, etc. The Evaluation Team Leader selected at random an additional five (5) project communities from each District, bringing the total sample to 25 project communities per District (50 in all).

Community and Beneficiary Surveys:

For field data collection, the HWT, SWT, and MMR groups were divided into four inter-disciplinary community survey teams. Each team was comprised of: one "hardware" specialist and GRWP counterpart; one "software" specialist and GRWP counterpart; and one "Marketing, Management, and Relations" specialist. Data exchange and interaction among survey team members was strongly encouraged. Each field survey team was assigned a number of specific project communities.

The Ghana-based consultants did not participate in field data collection. One member of the MMR group remained in Accra to work on GRWP management issues and to meet with national government officials.

The field survey was carried out in two phases. Over a period of four days, four survey teams visited 23 communities in Kwahu South District along with local government and NGO officials. At the end of four days in the field, all survey teams returned to Accra.

In Accra, all evaluation team members, along with GRWP Program Managers, met for two days in their respective subject-area groups (HWT, SWT, and MMR) for data sharing, compilation and analysis. Progress of the evaluation was reviewed, information and data needs distilled and survey tools refined.

Survey teams were reshuffled to accomodate individual assignment requirements, and a second phase of field surveys was undertaken in Sekyere West District for a period of four days. A total of 16 communities were surveyed along with local government authorities and NGOs. Thus, 39 out of the 50 communities in the sample were surveyed (see Attachment 2).

DATA ANALYSIS AND REPORT PREPARATION:

The field survey teams then returned to Accra for data compilation, analysis and preparation of general findings. Evaluation team members met in their respective subject-area groups, joined by the Ghana-based local consultants to compile and analyze data collected. General findings were noted and recommendations explored. Individual group members were assigned specific topics for report writing purposes. Group Team Leaders took responsibility for the final draft of their respective subject-area reports.

Preliminary Conclusions:

Group Team Leaders presented draft conclusions and recommendations of their respective groups to a general meeting of all evaluation team members and GRWP program managers for review and discussion. Clarifications and revisions resulted.

Debriefing:

The Evaluation Team Leader, assisted by the "external" evaluation team members, provided a debriefing to management on the major findings, conclusions, and recommendations of the evaluation. In attendance were:

* Evaluation "core" team and Team Leader
* WV/Ghana and GRWP Senior Management
* Mr. Steve Hilton, Conrad N. Hilton Foundation
* Mr. Carey Paine, WVUS Director for Development
* Two guests from Desert Research Institute
* Local consultants

Report Preparation:

The three sub-team leaders, with the assistance of selected sub-team members, prepared individual reports for those aspects of evaluation design assigned to them; the Evaluation Team Leader prepared the evaluation methodology and program background. Sub-team member Bruce Bradshaw then used these documents to prepare the initial draft of this report. Team Leader Bob Burke reviewed the first draft. Management Team Leader Randy Strash prepared the Executive Summary and the second draft, which was distributed for comment to the 10 core members of the team. The third draft was circulated to all Evaluation team members and GRWP program managers. Their comments were carefully considered in the preparation of the final version of the evaluation report. The report was sent to Mr. Bruce Wilkinson, West Africa Regional Director, on August 2, 1993.

"HARDWARE" TEAM REPORT

Julian Pitchford
Hardware Team Leader

INTRODUCTION

This section of the report covers four technical aspects of the GRWP, including:

Well-drilling: Performance against objectives and program impact; equipment suitability, maintenance and life expectancy; drilling methods; site selection and success rates; and staffing and logistical support.

Handpumps: Suitability, performance against national standards, installation, maintenance and maintenance training.

Water Availability: Previous versus current water availability in two districts surveyed, and impact on health and acquifers; alternative water sources; changes in water usage.

Sanitation: Latrine design, construction and performance against objectives; and baseline versus current community sanitation practices.

WELL DRILLING

Performance and Impact:

Drilling Progress: Up to December 31, 1992, during Phase Two of the Ghana Rural Water Project the following number of wells had been constructed:

Wet wells	202
Dry wells	158
Total	360

The well drilling is now progressing on schedule and unless some unforeseen problems arise there should be no difficulty in completing 300 wells by the end of the current (third) operational year.

Workmanship: On the whole, quality workmanship is displayed in the well construction. The well drilling staff are competent, experienced and committed to their work. They worked confidently as a team going through the various operations of mud and button bit drilling with bits being changed as different geologic formations were intercepted. We were

impressed with the way in which they encouraged community participation to the maximum possible extent in the well drilling operation.

Population Served: The total number of wet wells suitable for pump installation (202) will serve a total population of 60,600 on the basis of 300 person per well, which was the population per well recommended by GWSC at the time of the 1989 evaluation. Currently GWSC is considering that a potential population of 500 per well (giving 20 litres per person per day) may be more realistic for rural areas. This would raise the acceptable capacity of the wells that have been drilled to 101,000 as compared to an estimated population of 150,000 of the affected project communities. Thus community needs for water can be said to being partially met during the present phase.

Impact on Population: It was evident that the population level of the Greater Afram Plains is growing AND that the Ghana Rural Water Project is increasing the rate of growth of population by the following influences:

* Reduced infant mortality.
* An apparent increase in the birth rate.
* Increased migration into the area now that water and other infrastructural improvements are more readily available.

While some of these effects are beneficial they do give rise to concerns regarding the sustainability of the GRWP and the sufficiency of the current water programme to meet the needs of this increased population.

Concerns: From field trips to project sites around Obonyan No. 2 in the Kwahu South District, it was observed that all the four exploratory wells drilled in the area were dry and hence the community has no dependable source of water supply yet. During the field visit the project Chairman showed us a well which had been drilled but which was without a workable handpump. As explained later, the well had supplied water for a few weeks after which it dried up. Afterwards, the pump rods and other below ground components were removed by WVI to Suminakese. The community therefore, could not tell whether the well had recovered now, and could be re-commissioned.

There had been some problems in recruiting and retaining hydrogeological staff earlier in Phase Two, but these now seem to have been resolved. However, the programme has regrettably lost the wealth of hydrogeological experience and wisdom at field operational level that Bismark Nerquaye-Tetteh had provided during Phase One.

The capability for geophysical surveys is non-existent at WVI. There is no geophysicist and the offices's geophysical equipment is broken down. Even though one of the 2 available hydrogeologists could be trained to man the geophysical surveys, this should be viewed with care because of the present work load that both geologists carry.

Recommendations:

1. **The pump components removed from the Obonyan No. 2 well should be re-installed to check on water recovery of the well for use; if the quantity is not sufficient, hydrofracturing of the well should be considered.**

2. **WVI should implement the recommendation contained in the 1989 evaluation report immediately (i.e., WVI should purchase a geophysical instrument to enhance well sitings).**

3. **WVI should hire a geophysicist to operate the geophysical instrument, especially in the areas of dry wells or ground water scarcity.**

4. **For communities such as Obonyan No. 2, the GRWP should return to the project area for geophysical siting and further drilling work.**

Equipment:

Drill Rigs: Most of the heavier pieces of drilling equipment were ordered in 1985 and have been in service since late in 1986. The drill rigs and compressors came from Atlas Copco in Sweden and the trucks from DAF in Holland. Two heavier DAF support trucks were added during Phase One, and one of the original DAF 1800 support trucks was written-off in an accident during Phase One. A third drill rig which will be used as a back-up has been added during 1992. This latter rig is nearly identical with the existing rigs and is a used machine which came from World Vision's well drilling programme in Senegal. It is in need of some refurbishing; fortunately, the budget can accomodate the necessary repair work. The newest additional piece of drilling equipment is a Hydrofrac hydrofracturing machine which will be used to improve the yield of some wells of marginal yields and hopefully to increase the drilling success ratio. See Attachment 5 for a complete listing of project assets.

The drill rig that was selected for the Ghana Rural Water Project was the Atlas Copco RO 50 machine which is made in Sweden. Technically this is called a hydraulic top-drive rotary drilling machine, which means that the rotary drilling bit is driven by a hydraulic motor which is mounted on the top of the drill stem. This drive motor slides down the mast of the drill rig as the drill bit penetrates the ground. The hydraulic motor and other services on the drill rig are powered by a small diesel engine mounted on the deck of the drilling rig.

In addition to the drilling mast and the hydraulic power unit, other pieces of support equipment such as a mud-pump, a foam-pump and foam tanks are mounted on the drill rig. Finally it also has a rack to carry drill stem sufficient to drill a hole 200 feet deep.

Normally for the type of rock drilling that the GRWP is doing in Ghana, a drill rig would also carry a large rig mounted air compressor and its drive engine. WVG chose to have its air compressor mounted on a second truck. The reason for this is that they wanted to keep the rigs relatively small and light so that they could get into the most remote and hard to access villages which WV seeks to serve. In fact, they have succeeded very well in this, and can often get into places with the drill rig that we could not so easily reach with our four-wheel-drive personnel carriers. The access capability is further improved by the addition of a very powerful winch on each of the drill trucks. These have proven to be very useful in the rainy season.

The trucks were manufactured by DAF in Holland and were customized to carry the Atlas Copco rig and 400 horsepower compressor. The DAF 1800 is a four-wheel-drive rough terrain truck with a 10 ton carrying capacity and a high ground clearance. The GRWP normally loads them with much less than their full load capability to further improve their off-road capability, since they often have to enter villages by twisting foot paths not designed for vehicular traffic.

Maintenance: Apart from the Senegal rig, the WVI regular rigs and equipment were found to be well maintained and properly kept in good working condition. In interviews with the Maintenance Manager and with the Drilling Superintendent we learned that in addition to daily routine operational service, preventive maintenance servicing is carried out on the drilling rigs every four weeks. Records are being kept on the exercise.

Performance: Furthermore, the Drilling Superintendent confirmed that the performance of the drilling rigs in the various geological formations had been good (two drilling operations were witnessed - one in the Kwahu South district and one in the Sekyere West district on January 15 and 21, 1993, respectively). This good performance is evidenced by the number of wells (360) drilled to date (December 31, 1992) and the few (2) major repairs reported to have been carried out on the drilling rigs.

Life Exectancy: Based upon discussions with the operation and maintenance staff and also on our own observations, it is strongly anticipated that with proper maintenance, the present well drilling equipment is adequate for at least, a further 5-year phase of drilling.

Recommendations:

5. The rig from Senegal should be serviced and commissioned as quickly as possible, and then moved to the drilling camp in order to fulfil its role as the stand-by rig.

6. The Hydrofrac unit should be put into service without delay.

7. Since the drilling equipment would seem to be adequate for a further 5 years of operation

after the completion of the present phase, World Vision should give consideration to the future of the program after the present funding runs out.

Drilling Methods

The rig is capable of drilling by a number of methods including "rotary-air", "rotary-mud", and "rotary-percussion" or "down-the-hole hammer" drilling.

Rotary-Air drilling: The term "rotary-air" simply means that drilling is accomplished by twisting a drill bit into the ground. Cooling the bit and removing the cuttings are achieved by means of a stream of high pressure air from a compressor. The air is piped to the rig and then passes down the hollow drill stem to the drill bit. The drill bit can have many forms depending on what kind of formation is being drilled. This method is suitable for drilling through stable earth formations and through soft weathered rock which will crumble. Pressure is kept on the drill bit by the weight of the drill stem and by pressing down with the drill rig if necessary.

This method is also restricted in its usefulness to dry formations where the cuttings can be blown out of the hole by the air stream. When wet formations that form clay-like pastes are encountered, one has to change over to a wet drilling technique.

Rotary-Mud drilling: "Rotary-Mud" drilling is a wet technique where a liquid mud solution is pumped down the drill stem to cool the drill bit and to remove the cuttings. This can be used in areas where water is encountered and can also be used in unstable formations such as soft sand, where the drilled hole has the tendency to collapse. The mud is recirculated down the hole once the heavier cuttings have been allowed to settle out. While this method is very effective and adaptable, it is usually slower and has the disadvantage that large quantities of water are required in order to be able to drill the well. A third support vehicle is required for this type of drilling in order to be able to carry sufficient water to the drilling site.

Rotary-mud drilling, like rotary-air drilling, is not suitable for drilling through hard rock formations.

"Down-the-hole Hammer Drilling": When hard consolidated rock formations are encountered, which is frequently the case in Ghana, this method is preferred. The previous drill bit is pulled back out of the hole, removing the drill stem one length at a time. A down-the-hole percussion hammer is then attached to the drill stem and lowered down to the point where the hard rock has been encountered. On its lower end the hammer has a "button" drill bit which looks somewhat like a clenched fist with very hard tungsten carbide buttons forming the knuckles. The hammer is like a long slim compressed air "jack-hammer" which hammers the drill bit against the rock breaking it up into small chips. The hammer is slowly

rotated as drilling proceeds and the exhaust air again cools the bit and blows the chips back up and out of the hole. At times foam is added to the air in order to aid the lifting process.

Even in very hard formations it is possible to drill very quickly using this method.

Well Siting:

The hydrogeological unit of the GRWP is responsible for the selection of borehole drilling sites at selected community locations. The unit comprises two hydrogeologists assisted by two hydrogeological assistants and a draughtsman.

Geological Instruments: The unit has the following limited number of items of geological instruments and tools:

1 ABEM Tetrameter complete with accessories (broken down).
1 pocket stereoscope.
4 TDS/conductivity meters.
3 water-level indicators.
2 analog stop watches.
1 tape measure.
3 scientific calculators.
2 ordinary calculators.
4 lenses.
4 compasses.
3 geological hammers.

Survey Methods: Most of the well siting is done by site surveys of the local topography, geological indicators and vegetation patterns, which is aided by discussion with local villagers to ascertain information on surface hydrology and on the hrydrological history. of the area.

In discussions with the hydrogeologists, it was learnt that well-sitings have been carried out in similar manner as described above, that is, without any geophysical survey facilitation, due to non-availability of any geophysical instrument. This contravenes a recommendation made in the 1989 evaluation report that geophysical instrument should be purchased and employed.

However, we were informed that the hydrogeological unit have sought assistance from Ghana Water and Sewerage Corporation (GWSC) for geophysical surveys to be conducted, especially at project community sites where a high percentages of dry wells have been obtained, as well as other hydrogeologically difficult areas where water is desperately needed.

Success Ratios: In spite of these deficiencies, the well siting methods that have been

employed have been relatively successful producing a wet-well ratio to total wells drilled of 56%. Field evidence indicates that a possible reduction in the number of dry wells could have been obtained if geophysical well-siting techniques had been employed.

Concerns: Some existing well locations (for example; WVI Nos. 466, 490, 516, etc.) do not adequately take into consideration surface water drainage requirements. The well has been located in a local depression which is prone to puddling. Most well sites lack soakaway pits. Concrete aprons need water channels for easy drainage.

Also, in some cases, the well site is so close to the existing water source(s) (stream, dug-outs, etc) that a ready option is left open to those coming to the well at peak periods to use the traditional source rather than wait for his/her turn at the handpump well.

Recommendations:

3. The GRWP should implement the recommendation contained in the 1989 evaluation report immediately (i.e. WVI should purchase a geophysical instrument to enhance well sitings).

8. Where ready alternative well sites exist, wells should not be located in depressions where drainage of the pump apron will be difficult.

9. In cases where there are problems of surface drainage, the community should be assisted to construct a soakaway pit.

10. Water channels should be added to concrete aprons for easy removal of excess water.

11. Where ready alternative well sites exist, wells should not be sited too close to contaminated traditional water sources.

Support from Main Base:

Procurement: In discussions with the Water Utilization Manager and other members of the GRWP team we learned that the GRWP had experienced undue delays from time to time in the procurement of pumps and pump parts from India. This had significantly hampered the programme and had also caused discouragement in the communities and in the staff teams. Other delays mentioned were attributed to internal delays caused by WVI/IO and WVI-G procedures in ordering.

Logistics: The present mode of operations with supporting vehicles and arrangement that the

crew return to visit their families after a 3 week stay in the field is commendable. In interviews with some of the crew they expressed general satisfaction.

Documentation: WVI has a wealth of documented information and data on well characteristics, geology, socio-cultural practices etc. These are still not computerized.

Recommendations: 12. WVI should ensure that minimum time is spent on ordering procedures, and that ordered goods are shipped and delivered promptly by manufacturers.

13. WVI should computerize the existing data and information on wells and communities.

HANDPUMPS

Suitability:

At least for the present, the performance of the India Mark II handpump is satisfactory and its continued use meets GWSC's approval.

For the future, GWSC is considering the use of village level operation and maintenance (VLOM) pumps. World Vision should also consider switching to such a pump after Phase Two of the Ghana Rural Water Project is completed. In the near future VLOM pumps need to be examined and evaluated for their suitability. WVI Ghana should keep apprised of the work that GWSC and other organizations implementing water projects in Ghana are doing with VLOM pumps.

The attraction of VLOM pumps lies in the ease with which the below ground components can be maintained and repaired, especially by women (who are the primary pump users). Also, only a few tools (one spanner and a light-weight clamp and rope) are required for maintenance and so each village can be provided with their own set.

Recommendation: 14. WVI should consider ordering a few VLOM type of pumps (Afridev etc) to install for evaluation and monitoring.

Installation:

WVI installation and repair staff are competent. Out of 202 wet wells drilled 163 have been installed with India Mark II handpumps. The pump installation is lagging behind the drilling because of delays in receiving pumps from India, but this situation will soon be rectified now that the shipment has been received.

Recommendation: 15. WVI should order pumps earlier in the cycle so that, in future, time-delays on pump installation can be minimized to a maximum of 1 week from completion of drilling.

Excessive Iron Content in Water:

Excessive iron content in the water in certain locations had discouraged some communities from using the new water source. An iron-removal plant has been developed locally by Dr. Amuzu of the Water Resources Research Institute, and is now being tested (see report by Larry Quist in Attachment 6). However, water testing has shown that the fault was not so much with the water, as the result of the aggressive water acting on the galvanised iron pipe.

The pump connecting rods and the rising mains on all the Phase Two pumps have now been changed to stainless steel; it is reported that problems with iron in the water have virtually been eliminated in the areas where WV is working. This has raised costs somewhat, but not nearly as much as the prospect of installing iron-removal plants at every problem location.

Repair and Maintenance:

Pump break downs are infrequent, and when they have occurred the village volunteers have generally been able to make a rapid repair. In one instance we learned that the pump cylinder had been dropped down the well during the repair and WVI had to return to "fish" out the pump. In one other instance an "uncommitted" village took several weeks to raise funds and organize themselves to complete a repair.

Most pump users (many of whom were school-aged children) were observed to use short jerky strokes instead of long slow strokes in pumping water from the wells. This tends to accelerate pump wear and maintenance problems.

Recommendation: 16. Communities, and school children in particular, should be educated in the correct way of using the India Mark II handpump to minimize breakages.

Spare Part Distribution:

The arrangement which WVI has proposed with the district Government of Kwahu South for the location of spares at the district level is far from completion. Hence, WVI has no administrative infrastructure yet in place at the district level to handle spare parts. For the moment, in most cases, WVI remains the distributor (seller) of spares to the villages.

Recommendation: 17. WVI should endeavour to ratify the proposed

arrangement on location of pumps and spares at the district level with the district Government.

National Handpumps Standards:

Ghana is in the process of launching a new National Rural Water Supply and Sanitation Program policy. A workshop was held at Kokobrite in February, 1991 which outlined a strategy and Draft Project Guidelines were issued in October, 1992 (see Attachment 7). This document gave the following as the objectives for the National RWS/S Program:

> The primary objective of the National RWS/S Program is the provision of reasonable access to safe water to communities with populations over 100 that are willing to contribute towards capital cost and to pay for all the recurrent costs of improved facilities.
>
> The second objective is to improve the quality of life of the rural population through the promotion of better health practices, focussing on use of clean water, good hygiene, diarrhea control and proper excreta disposal. An important aspect of this effort is the generation of increased demand for improved water and sanitation services.
>
> The third objective is the establishment of private sector capacity to construct low-cost latrines and hand-dug wells, to maintain manual and mechanized pumps, and to distribute equipment and spare parts.

The following was given as the definition of *basic service*:

> Basic service for water supply means a protected, year-round supply of 20 liters per capita per day, preferably within 250 to 500 meters of all households and serving 250 to 300 persons per outlet.

At this time no national standard for handpumps is available but the desire of the GOG is to move towards VLOM pumps and towards private importation and stocking or possibly to local manufacture although this is recognized to be a long way away.

The GRWP is generally in compliance with the draft policies for the National RWS/S Program, although in some communities, since the GRWP endeavors to serve as many people as possible, they are not able to fully meet the "Basic Service" quantities of 20 liters per person per day.

It was learnt from the local UNDP water expert that the prospective VLOM pumps under trial in Ghana are:

* Afridev
* Nira
* India Mark III
* Vergnet

The Government is also encouraging the local manufacturer of handpumps by a Ghanaian manufacturer. WVI should follow-up closely on what the Government of Ghana (GOG) is doing and to offer any needed support from its experience. If Ghana Water and Sewerage Corporation is going to be at least partially privatized, and the GOG is endeavoring to encourage private manufacture or importation of pumps, WVI should work to support this transition, since it offers better prospects of long-term sustainability.

Recommendation: 18. Since Ghana Water and Sewerage Corporation appears to be moving towards privatization, and since the GOG is endeavoring to encourage private manufacture or importation of pumps, World Vision should work to support this transition.

Maintenance Training Programme:

We did not evaluate the pump repair and maintenance training programme in depth, but did have the opportunity to see how effective it was in practice at village level. Perhaps the biggest obstcle to so doing is that the pumps are new, and so have been quite reliable; this has afforded the volunteers few opportunities to test and practice their skills in repairing the pumps. Where pumps had broken down, in most cases, they had been repaired in a timely manner. In Kwahu South, most of the pumps had been installed for a year, they had initially been installed with galvanized risers which later were changed to stainless steel by the pump volunteers under supervision by World Vision. This gave them some practice.

Overall in Kwahu South, the pumps seem to be well-maintained (with the exception of external drainage), and are generally kept clean and regularly greased. Some villages do not have their own 19mm spanner and grease, and so have to borrow from a neighboring village.

It was harder to see how effective the repair and maintenance training has been in the Sekyere West District since the pumps have been installed more recently and the training programme is not as far advanced. Here conditions are even more difficult so that problems identified in Kwahu South will inevitably be more pronounced here. Once again breakdowns have been few and all the pumps that we saw were operational.

Probably due to culture at village level and oversight at the World Vision level, the pump repair and maintenance volunteers, so far, have been virtually all men. As we visited villages, we asked if women wanted to volunteer and found, in most cases, that they

welcomed the opportunity. It was agreed that in future women will be included in the repair and maintenance training programmes. What we did find was that some of the trained volunteers have already left the villages, and it is clear that while women will offer more stability there is a need to teach the volunteers to train others, especially at the level of groups of communities.

Recommendations:

19. The GRWP should increase the target number of trained volunteer mechanics per community from 2 to 3, and by a process of facilitation ensure that these in turn train others.

20. Communities should be encouraged to have at least one woman in the initial group of pump volunteer trainees.

Spare Parts Supply:

The concept of service center community groups is not yet working well in Kwahu South, and is not working at all in Sekyere West. Much of the problem in this lies at the District Administration level since the service center communities have not yet been officially identified and no other centralized facilities have been created yet. Thus World Vision has been left in the role of pioneer. In Kwahu South, pump repair tool sets have been distributed to 6 service center communities and we found that the satellite communities knew where the tools were and how to access them. In Sekyere West, as can be read elsewhere, the District Administration is much less in touch, and much less involved, with the needs and realities of the rural village. It may well be that the GRWP should consider partnering with SMA at Oku Junction for them to act in the service centre role.

World Vision is still the provider of spare parts, although they are being sold to the communities in an appropriate manner. In Kwahu South the District Administration has agreed to hold a supply of parts, but as with most things governmental, this is slow in taking place. The whole issue of pump standardization, supply of pumps and supply of spare parts is under extensive review at national level. The intent is that the whole system will be privatized, with the possibility that most of the functions of the Ghana Water and Sewerage Corporation will also be privatized.

To date, WVI has provided 9 sets of tools to volunteer mechanics for the repair and maintenance (R & M) of 52 wells in 6 zones of 31 communities.

The training of two volunteer mechanics per well under the present WVI policy is not sufficient and the trained volunteers are not training others which should be the case. Also, in some communities (Osuben etc) it was found that several of the trained volunteers have left the villages and have not been replaced.

No women have been trained as pump volunteers even though they are the principal pump users. During our interviews it was clear that women were prepared to volunteer for training. It is believed that women will be more stable in residence in the communities than has been the case with the male volunteers that have been trained to date. (see section 3.2, below).

Not all communities have sets of 19mm combination spanner and grease for the regular maintenance of pumps. This was reported by a number of volunteer mechanics interviewed at Osuben, Nsare etc.

The present policy of the Ghana Government (GWSC) on repair and maintenance of wells is for the communities to do it themselves. This policy is reflected in the WV approach; however, the WV Ghana Handpump Training Manual is too technical and difficult to follow by the volunteer mechanics.

Recommendation: **21.** **WVI should provide the necessary sets of 19mm combination spanner and grease to volunteer mechanics at the communities, to enhance sustainable maintenance.**

22. **The WV Ghana Handpump Training Manual should be simplified and should have more simple pictures and diagrams.**

Sustainability:

It has already been noted that some of the male pump repair volunteers have left their villages so that training for new volunteers is now needed to replace those lost. Since the female population tends to have more stability than the male, it makes sense to train a number of women in the techniques of pump monitoring, maintenance and repair; those communities which have chosen to train women for these responsibilities have indicated that women perform as well or better than the men in this role.

It was also seen that the pump volunteers had had little opportunity to practice their skills since the pumps have been very reliable thus far, due to the newness of the equipment. The repair and maintenance unit is going back around giving refresher training, but it is clear that the need exists for the village volunteers to be able to train others, and for the village water committee to ensure that this is done. Without this the pump repair and maintenance programme will not be self-sustainable.

The training of pump repair volunteers on its own is not sufficient to ensure sustainability of the water programme. Clearly the water source has to be sustainable as does the provision of spare parts. In general there is sufficient rainfall everywhere in Ghana to be able to provide adequate aquifer recharge for handpump wells.

WVI has begun the process of obtaining Government support at the district level for the storage and distribution of pump spares for the WVI wells at the communities. Unfortunately, there appears to be nothing in place yet. It appears that budget difficulties and delays in obtaining necessary approvals had hampered the good intentions of the District Administration. In the interim, the GRWP has decided to follow the pattern established in Sekyere West, and build its own temporary service center facilities.

In Sekyere West, the GRWP simply converted the simple block-wall construction base camp at Oku Junction into a service center cum development facilitation center. Father Globus of SMA has agreed, in the intermediate term, to administer (stock and sell) the spares procured and delivered by WV.

In Ejura Sekyedumasi, the camp is to be converted in similar fashion; the tents and temporary shelters are gradually being replaced with simple but more permanent buildings which will be able to serve the purpose. The para-professional development worker engaged by the project for that area will likely administer the stocking and sale of the parts; it may be that part of his salary will be provided by proceeds from the sales.

Recommendation: 23. Until such time that a privatized system is in place, WVG should intensify its efforts to obtain the commitment of the District-level government to the storage and distribution facilities required for WV handpumps and spares in the District.

WATER AVAILABILITY:

The evaluation team carried out a simple survey in each village visited to determine the "before and after" situation with respect to water supply and sanitation. The results of the surveys are given in Tables 1 through 8 in Attachment 8, and elaborated below.

Clearly, for a village to have established itself with a stable population, there had to have been a reliable water source prior to the GRWP intervention. That water source may have been or become contaminated, or the yield may have been insufficient to keep pace with the demand. Information on the prior situation was obtained either from an inspection of the original water source, or by anecdote. In the process of obtaining this information, much was also learned of the demands and limitations that the original water source imposed on the village, with respect to time, energy, health, spirituality and village-level economics.

The availability of water was a major determinant in many aspects of the development of the community -- often in ways that were quite unexpected.

Kwahu South:

Previous Situation: Various members of the evaluation teams surveyed some 23 communities in the Kwahu South district. Some of the information which was gathered is presented in tables 1A to 5A and 1B to 5B (Attachment 8). The "A" series of tables covers the situation which existed before the advent of the World Vision GRWP. The type, quality, and reliability of the previous water sources for these communities varied, but was generally characterized by being a surface water source of poor quality which partially dried up in the dry season.

For many communities the dry season was particularly difficult with both the quality and the quantity of the water that was available being severely degraded. We heard many tales of the women being away much of the night getting water, often sitting for hours by a dugout in a riverbed patiently waiting for their bucket to fill. We heard numerous stories of rejuvenated marriages in villages that now have handpump wells. We also heard in several villages that the community would almost certainly have had to abandon their village if World Vision had not come. This is also a reflection of the continuing drought in that area where rainfall has been less over the recent decades than it was earlier this century.

Depending on the specific water source, diarrhoea, guinea worm, malaria, yaws and occasionally bilharzia were frequent health problems associated with the surface water sources. We also saw some incidence of tropical ulcers where the extensive scar, muscle and tissue damage which had resulted was severe and permanently debilitating. Although these were most likely not the direct result of the water source, they were most certainly tied to the poor hygiene and sanitary conditions that were directly created by inadequate and contaminated water.

Current situation: Since the advent of the borehole wells with handpumps and the associated health education programmes major changes have taken place in the life and health of most of the villages which we visited in Kwahu South. Water consumption has generally risen except in the few cases where water was already in close proximity. In some cases the increase during the dry season has been as high as six to ten times the previous consumption and it was not uncommon to hear of families that were now bathing two or more times a day.

This was not always the case, however; we did visit villages such as Obonyan No. 2 where a series of dry holes were drilled and no new water has been brought, so clearly no change has been possible. We also visited communities where the new well has been located close to the old source so that a complete switch to well water has not yet occurred, and where little change has taken place (e.g. Yaw Tenkorang). We are recommending elsewhere in the report that this type of well siting should be avoided where it is possible to do so.

In the many anecdotes that we heard relating to the improvements that had taken place as the result of the new provision of water, it was not uncommon to hear of rejuvenated marriages

and of women being less tired and having more time for other activities. "You have put more joy back in our marriages" was a common reference to the increased sexual activity which has resulted. Clearly the provision of water and sanitation is increasing the birth rate in the recipient communities. We even had the direct comment that one woman now planned to have several more children since the trek for water was no longer arduous and the provision of safe water in the village significantly reduced the dangers of child birth which had been a barrier before. This was a benefit of safe water that no one had anticipated.

Recommendation 24. Family planning education and services should be intensified.

Water borne and water related diseases are on the decrease as testified by the communities in Atta-Ne-Atta (Yaws) and Atarekan (Tropical Ulcers).

Changes in Water Use Practices: Only a limited survey of the changes in water usage was carried out during the evaluation, and much of this was by simple interview on the change in the practices of the water carriers. Some of this is presented, for Kwahu South, in Tables 1A to 5B (Attachments 8.1 - 8.10).

The evidence gathered indicated that the change in consumption varied from no change up to a six- to ten-fold increase in water consumption in some communities. The "no change" situation was frequently found when the well was located close to an historic water source which provided an adequate quantity of water, and thus the new well was only seen as an alternative clean water source.

Twenty households in five communities in Kwahu South were surveyed to find their current pattern of water use. The results are presented in Table 8 (Attachment 8.15). The results show a total family use of 89 imperial gallons (404 litres) per household per day. Unfortunately the size of household was not recorded. If we may assume 10 people per household, this indicates a human usage of about 30 litres per capita with an additional 100 litres per family being used for livestock and agriculture. It is worth noting that approximately 250 litres, which is 250 kg (550 lbs) of this total is carried back to the vicinity of the home. The water carriers were the women and children.

In most of the communities visited, water related diseases were reported to have declined significantly. Guinea worm was reported to have been a significant problem in Kwahu South with bilharzia also having been a problem in some communities. Both disease were reported by the communities to have decreased significantly. This was confirmed in discussions with the District Health authorities, and by doctors and staff at the Holy Family Hospital which serves the area. Diarrheal diseases and skin disease such as yaws and tropical ulcers had also declined with the availability of safe water and the increased awareness and practice of improved hygiene.

In a few villages, usually where the well is located adjacent to the old water source, water is

still being used from both sources interchangeably. In Yaw Tenkorang children were observed getting water from the stream water source to avoid waiting at the pump.

Recommendations:

25. In villages where the old (polluted) water source is still being used in addition to the well, further investigation should be carried out to determine the reasons and the health education curriculum revised accordingly.

26. Where communities persist in using the old source, the water committee should be encouraged to actively discourage its use -- possibly by charging fines (with proceeds going for well maintenance).

27. There is a need for a higher standard in training and spare parts inventory for areas with inadequate numbers of wells, particularly where communities are dependent on a single well.

Sekyere West:

Previous Situation: A total of 16 communities were surveyed in this district. Some of the findings are reported in Tables 6A-7B (Attachments 8.11 - 8.14). The previous water supply conditions in Sekyere West were, generally, worse than that which had obtained in Kwahu South both in quality and in accessibility. There are many cases where women walked great distances, and even occurrences where communities were dependent on water imported by tractor and trailer during the dry season. In spite of this we did not hear of cases where the community had been considering abandoning their village because of the absence of adequate water.

The water-related health problems that we saw were similar, but the villages and their inhabitants were generally not as clean in Sekyere West than in Kwahu South. In addition, we saw numerous cases of malnutrition among the children in Sekyere West which we had not seen in the south. We believe that the malnutrition which we saw was largely due to poor nutrition (as opposed to food shortage) coupled with a prevalence of round worm infestation in the children -- the latter being aggravated by the poor sanitation conditions existing in most villages.

Current situation: Development in the Sekyere West district is less advanced than that in Kwahu South. The GRWP started later here, the logistics are more difficult, and the operational season is much shorter due to inaccessibility during the rainy season; thus not as much progress has been made. It is also fair to say that more progress is needed for the

starting point of the communities is less advanced. An additional characteristic is that for many of the communities there are barriers of ethnic diversity (28 different tribes are present in this district), and the influence of the Islamic religion which dictate that progress will in any case be made more slowly. (The Muslim family structure typically is highly resistant to changes of any sort, as attested in anthopological and sociological literature.)

Despite these factors, progress is being made and the provision of easier access to safe water is improving life and health. The improvements of life are particularly evident in the lives of the women when the water is closer to home, and even within reach of their children. We were told on several occasions that the women were able to increase their farming (family food production) activities. We heard stories of water usage increasing by as much as ten times during the dry season. Health improvements due to the improved access to safe water include a marked decrease in the incidence of guinea worm (in Kyekyebon, Kyerase and Dagomba) and diarrhoeal diseases (in Kyerase and Kyekyebon). We were also told that, "Plenty of water close to the village means more pleasure in our nights".

Changes in Water Use Practices: The water and sanitation programme is newer and less advanced in the Sekyere West district; delays in the installation of pumps has further diminished the impact of the programme in this district. The result is that the changes are only starting to happen in many villages. It was not unusual to find that several communities had been sharing a well, since their own well had been waiting for a pump. The result was that we were not able to observe the mature changes in water usage. Some of the findings are reported in Tables 6A-7B (Attachments 8.11 - 8.14).

Water usage in this district was, in general, very low before the wells were brought in, and water was often of very poor quality. Two villages adjacent to a tributary of the Afram River had made dugout reservoirs to store water. In other areas, seasonal streams provided water, and some villages even had water brought in barrels from Ejura by tractor-drawn trailers at 2,000 cedis ($8) per barrel. At dry times water consumption in some villages was as low as a few gallons per household per day. A number of communities still have restricted water sources which are insufficient to meet their full needs.

For many villages, water usage has increased tenfold or even more where the well has sufficient flow and is close to the village. Commensurate improvements in health were reported with the major problems having been guinea worm, diarrheal incidents, and yaws.

Relationship Between Water and Health:

Communities in both Kwahu South and Sekyere West are aware of the improvements in their health due to the availability and accessibility of potable water. This was vividly brought home to us in Dagomba (Sekyere West) where the recorded guinea worm cases dropped from 130 in 1991 to 66 in 1992 and 5 at the beginning of 1993. (They were provided with borehole water at the beginning of 1992.) A number of communities in Kwahu South had also linked the reduction in cases of yaws to the improvements in personal hygiene due to the

availability of safe water. Both the District Health Medical Teams for Kwahu South and for Sekyere West and the Holy Family Hospital at Nkawkaw (Kwahu South) have the impression that guinea worm is decreasing.

Recommendation: 28. Health education in schools must be intensified so that children will understand the relationship of clean water to good health, and polluted water to various kinds of diseases.

Aquifer Recharge:

The long-term average rainfall in the whole of the project area is in excess of 1,000 mm per year. Based upon this, it would require approximately one third of the rainfall on a single hectare to replenish the water extracted by each pump (at maximum capacity). Most wells are served by a probable catchment areas measured in tens or hundreds of hectares; thus aquifer recharge should not be a problem. There may be wells, however, that are served either by discrete or very limited aquifers. In these cases the recharge of the well may be slow and water supply may be deficient in the dry season.

Recommendation: 29. Since information is not available on the recharge of the aquifer serving each well, it is recommended that a modest program of well-monitoring be established to ensure that any problems with the aquifers are identified at an early stage.

Alternative Water Sources:

It has been understood since the initial planning stage that the project would not be able to access water for all the target communities by drilling wells. Already communities such as Obonyan 2 have received a full complement of dry holes but no wet wells. While this is a large community with considerable need it does have an existing source which is all season and sufficient, if not ideal, for the basic needs of the community. However it is clear that the community is disappointed at the lack of success and has been de-motivated by this. Advances which might well have taken place are unlikely unless an acceptable solution to supply sufficient safe water can be found.

We were told that the current plan is for a more detailed geophysical search to be made under a sub-contract to Ghana Water and Sewerage Corporation. Dependent on this further drilling will be undertaken prior to developing alternative water source technologies for the community.

It would appear that several alternative possibilities do exist for Obonyan No. 2, such as rainwater harvesting off sandstone slabs, subsurface weirs, small dams, etc. So far no water

sources have been developed under the current phase of the GRWP, and so we are unable to comment on the ability of the project team in this area.

Little work has been done on alternative water sources thus far, and we were not able to observe any examples of alternative sources having been developed, although there were a number of communities where WV had been unsuccessful in obtaining water by drilling. It was previously noted that the recommendation of the 1989 evaluation with respect to geophysical surveys had not been implemented. World Vision has requested help from the Ghana Water and Sewerage Corporation in carrying out geophysical surveys in communities where they had not located water. This is awaited before a decision to proceed with the development of alternative water sources.

The Hilton contract tends to lead the GRWP towards drilled wells with handpumps as the water solution of choice, but it does allow other forms of water supply to be substituted where the drilled well is not suitable (probably on a one for one basis, but if a large system were developed, the GRWP might justifiably count it as three wells). The Hilton Foundation would likely be pleased to know that WVG had been able to serve some communities by alternative solutions, since Mr. Hubbs has previously indicated he shared WV's pain when they had not been able to bring a well to a needy community. Mr. Hubbs has already had the opportunity to observe alternative solutions in communities where other agencies (Catholic Church) have provided water by other means than a borehole.

The Technical Support Unit have not taken strong initiatives to provide alternative water sources in "dry" communities. This certainly is the case at Obonyan No. 2, where WV drilled a number of dry holes and yet a great potential for various forms of "Rain Water Harvesting" exists. This is a sad case, since the community is clearly ready to "develop" but the people are de-motivated by the drilling failure. Obonyan No. 2 had the dry wells drilled early in FY91 -- 18 months ago -- and the community is still waiting for WV to respond to their need. While the GRWP waits for the hydrofrac unit and then for the GWSC team to come and do a geophysical survey, the community will have become very de-motivated and tired with WV.

WV must be capable of "shifting gears" more rapidly, in order to be genuinely responsive to the people whom they seek to serve. This may require additional staffing. It would certainly be cost-effective for an individual to stay with a given community for quite a long time, when compared with the alternative of continued unsuccessful drilling. If the GRWP can find a suitable person, probably a young graduate with good visualization and manual skills as well, he could be trained to work with the community to help them develop alternative solutions.

Recommendations: 30. **The GRWP should hire at least one additional technical staff person to be assigned to the Water Resources Unit; this person should dedicate 100% of his/her time to following up**

"dry" communities on-site.

31. **The HE/CP team should accept responsibility for community monitoring and follow-up in "dry communities" as well as "wet" ones; this would seem to require increased staffing levels for the HE/CP team.**

SANITATION:

Summary of Findings:

The technical content of the latrine construction activity will be discussed at more length later, but clearly this component is lagging behind the other activities at this stage. Only 57 latrines have been completed to date, all in Kwahu South, compared to 202 wells. While a certain amount of lag time is to be expected (say, 3-6 months or so) the lag in this case is a full year; this is not acceptable.

There was clear evidence in the Sekyere West district that, with the inception of the health education and community participation programme in the villages, some communities were motivated to begin additional latrine construction on their own. Both in the Kwahu South and Sekyere West districts it was evident that the awareness of the need for latrines for sanitation was high in many communities. Largely this motivation was for latrines for adults, although some communities visited were aware of the more important need for the children and were constructing latrines for their schools.

However, appropriate designs have yet to be worked out by the Latrine and Laundry Construction team. No major standard latrine design has been adhered to. The designs that have been built thus far are technically unsound; the latrines lack adequate design in the areas of odour, fly control and privacy. The project is not effectively transferring latrine construction skills to the communities, or conveying an adequate understanding of the principles behind its design and use. Communities in massive rock out-crop areas of Obonyan and Abotriansa are not getting the help and guidance they need to resolve the kinds of problems that they are encountering.

With a programme of water supply and sanitation of the size of the GRWP, it would seem to be remiss that there is no public health engineer on the project staff, or a even a sanitation engineer as part of the Technical Support Unit. This may be the root of the problem.

There also appears to be confusion regarding the role of the GRWP in latrine construction. Are they facilitators and trainers, or constructors and providers of latrines?

The good facet of the present somewhat unsatisfactory situation is that the communities are willing and motivated to construct latrines as part of their input to the programme.

Kwahu South:

Various members of the evaluation teams surveyed some 23 communities in the Kwahu South district. Some of the information which was gathered is presented in tables 1A to 5B. The "A" series of tables covers the situation which existed before the advent of the World Vision GRWP. The "B" series covers the current situation. (See Attachments 8.1 - 8.10)

Previous Practices: We found that three basic patterns of sanitation had existed in the villages of Kwahu South.

The first was that there was no formal sanitation, and the community members defecated outside the village. This practice is frequently referred to as "free ranging" by WVG staff.

The second pattern consisted of two or more community pit or trench latrines, one for men and one for women. We observed no cases where these basic latrines were divided into male and female sections, as is the case with the KVIP design. In each case the men's and women's latrines were physically separated by some distance. The communal pit or trench latrine was by far the most common pattern in Kwahu South.

The third pattern was one where some simple single-family latrines had been constructed, either in addition to communal latrines, or as an alternative to "free ranging".

The progress that the communities had made prior to the World Vision intervention was particularly admirable since the overburden was very shallow and solid rock was near to the surface. This made the task of digging trenches extremely difficult and kept the capacity low.

Current situation:

In Kwahu South, nearly forty ventilated pit latrines have been completed by the communities assisted by World Vision. Most are of relatively similar design, with adobe walls, a corrugated iron roof, a wooden floor, and vent pipes. Unfortunately, the design that has been used and taught is technically unsound, and demonstrates a basic lack of understanding of the principles on which ventilated improved pit latrines operate. There also seems to have been a basic lack of understanding of the culture and desires of the people within the communities. This facet of the Ghana Rural Water Program has thus become its Achilles' heel and needs to be re-thought. The technical shortcomings of the current designs are dealt with at more length later in this section of the report.

In Kwahu South, many of the communities which we visited had already started to dig trenches for latrines, but had met rock before the trench was sufficiently deep -- sometimes only 3-4 feet below the surface. At this point they had stopped to wait for guidance and assistance from World Vision, which so far has not been forthcoming. Even if WV had a sound latrine design, they do not have enough staff coverage to be able to adequately

supervise construction by the communities -- let alone build it themselves.

Recommendations: **32.** **Designs for trench latrines should be developed which feature chambers that are partially below and partially above ground, for areas where the underlying rock is too close to the surface to allow for a hand-dug pit of sufficient depth.**

33. **World Vision needs to structure and staff the Latrine and Laundry Construction team in such a way that timely latrine construction facilitation can be provided to the communities while they are still motivated to build.**

Sekyere West:

Previous Practices: Tables 6A and 7A give details of the findings for the Sekyere West district (Attachments 8.11 and 8.13). Here again the most common solution was for the community to have separate male and female communal pit/trench latrines. For the most part the problem of rock close to the surface was not as severe as in Kwahu South, but several villages stated that their pits collapsed in the rainy season, which is not surprising considering the sandy nature of the soil. Clearly there is a need for some reinforcement of the pits in this district. In Sekyere West, we learnt that the communal latrines were for adults only, since the parents expressed the fear that their children would fall into the pit. The sad result of this is that the most needy are unprotected, and roundworms are extremely common among children in the communities which we visited, with resultant bloated bellies and malnutrition. Good sanitation is essential if the roundworm problem is to be controlled.

Current Situation: No sanitation construction work has yet been done by World Vision in the Sekyere West district, but the very presence of WV with a water and sanitation project has already encouraged some of the villages to improve their own situation. In some of the villages it will not be too difficult to motivate them to construct new latrines once WV shows them a satisfactory design which will perform effectively and which will not collapse during the rainy season. The biggest problem in this area will be the tribal diversity which the GRWP will face.

Some villages are already much more inclined than others to adopt sanitation measures, and it should be much easier to motivate these communities to construct latrines and to institute sanitary disposal of village dry waste.

Recommendation: **34.** **The sanitation program should be designed with children in mind, as in many of the**

villages there is currently no latrine suitable for them; the schools should be invited to participate in designing and building such latrines.

Latrine Design:

In other respects, the appropriate technology elements of the GRWP have been quite good, but the technical understanding of the design and function of VIP latrines has been missing the mark. The following are the principal errors or deficiencies of the current structures, as they have been built:

(1) The vent pipes are located within the superstructure building and so are shaded from the sun.

(2) The building is not orientated to face the prevailing wind (so that air will blow into the pit and out of the vent pipe).

(3) The building is not orientated so that the vent-pipes get heated by the sun.

(4) The vent pipes in some cases had bends but must be straight and vertical. (So that flies will be attracted by the light).

(5) The vent pipes are too small in diameter (this is a recent research finding).

(6) The building is too narrow so that there is insufficient room to pass in front of another user.

(7) The squatting holes are too close together,

(8) The building incorporates a male block and a female block; this may not represent the first choice of the user communities, and does contribute to increased construction costs related to privacy.

(9) Communities expressed a desire for more privacy, with simple dividers between "cells".

(10) The roof sits above the walls and is ventilated on both sides instead of only on the upwind face. This allows a through draft and defeats the forced flow into the squatting hole and out of the vent pipe. Flies and odor result.

(11) The interior is too light such that the flies can see more light at the squatting hole than at the vent pipe. (And so try to leave by the squatting hole).

(12) Care has not always been taken in the location of the latrine with respect to surface drainage such that some of the latrines will be prone to pit collapse induced by drainage problems.

(13) The superstructure of adobe, while being culturally appropriate may not have been the best choice due to its weight and permanence. The weight may well help induce collapse of the pit. The permanence of the superstructure does not permit its movement when the pit is full.

It is beyond the scope of the evaluation report to redesign the particular latrine type that World Vision is implementing. In the previous section, the deficiencies that we have identified are listed; it should not be too difficult to develop a series of more appropriate VIP latrine designs which will overcome these shortcomings. Dr. J.G. Monney would be an excellent resource as a consultant to the GRWP to assist in this evolution process.

We also believe that some of the communities have much to contribute to the process, and that indigenous practices should be incorporated to the extent possible. One such example is the separation of male and female latrines, which may significantly reduce construction problems related to privacy.

In interviewing some of the latrine construction team, it became clear that they were confused as to their role. The confusion regarding their role has been exacerbated by the perceived pressure, stemming from the wording of the contract letter from the Conrad N. Hilton Foundation, to build an equal number of latrines as wells, all of "KVIP or better" quality. The team is not clear how much they are to assist in the construction of the latrines and how much they are to teach and supervise others in their construction. Because of this confusion, the project is not currently transferring knowledge on good latrine construction to the communities.

The LLC team should see themselves as trainers, working with local artisans to help them develop the requisite construction and design skills that are needed for them to build as many latrines in the communities as needed. Artisans from groups of communities should be brought together in a similar manner to that now being done with the pump maintenance volunteers. During this training period, it may well be that the local artisans assisted by the WV latrine team actually build a model latrine in the training community which is culturally appropriate for that area. This can then be used to show the neighboring communities what they need to build.

Recommendations: 35. The GRWP should work with its consultants to develop a series of latrine designs that will

improve ventilation, reduce or eliminate the fly and odour problems, and improve access and privacy for the users -- in response to their requests.

36. **The HE/CP team should intensify its facilitation of the community towards accelerated response to latrine construction; the facilitation process should include a means to capture indigenous knowledge in the area of sanitation and hygiene.**

37. **The Latrine and Laundry Construction crew needs to be trained to provide facilitation, training, guidance and technical support to the communities so that they can construct their own technically sound latrines.**

Sanitation:

Neither the Water Resources Unit of the GRWP nor the Technical Support Services of WVG has on board a technical person to cover the technical aspects of sanitation and environmental health. A public health specialist is to be preferred, since WVG is more likely to obtain low-cost, creative solutions from such a specialist than from an inexperienced sanitation engineer, who may be predisposed to recommend the KVIP (or some other standard latrine design) as the solution to every sanitation problem.

The sanitation monitoring function has not been included in the position charter of either Technical Support Services (WVG) or the Water Resources Unit (GRWP). The development of this function requires some technical competence, although this could be provided by a consultant rather than by an additional employee. The objective should be to help the communities to construct their own latrines in an effective, economic, and sustainable manner, and so to obtain the full potential health benefits of the latrine construction effort.

Recommendations:

38. **A technical person should be added to the Water Resources Unit (GRWP) or to Technical Support Services (WVG) to cover technical aspects of sanitation and environmental health; a public health specialist is to be preferred.**

39. **The sanitation monitoring function needs to be included in the position charter of either Technical Support Services or the Water Resources Unit.**

HEALTH EDUCATION AND COMMUNITY PARTICIPATION EVALUATION REPORT ("SOFTWARE")

J. David Deshler
Software Evaluation Team Leader

This section of the report includes an evaluation of the health education and community participation (HE/CP) of the Ghana Rural Water Project (GRWP). The evaluation team focused its data collection on the following major questions:

Community Participation: What are the health education and community participation strategies, activities, and methodologies; and to what extent are they operational?

Water and Sanitation Committee Operation: Have these village-level committes operated effectively?

Community Structures: Has the project collaborated with and related to community organizational structures effectively?

Program Impact: What types of impacts on the community have resulted from the HE/CP, well drilling, and sanitation facility construction efforts?

Indigenous Beliefs and Practices: What are the cultural belief and practice issues that can inform World Vision's work, particularly among traditional people?

Gender Issues: What types of gender issues exist in the villages in relationship to the project?

Programmatic Sustainability: What are possibilities for programmatic sustainability of the GRWP?

Environmental Sustainability: What are major concerns and threats to environmental sustainability of development in the region served by the project?

COMMUNITY PARTICIPATION

Community participation is a major prerequisite of effective development activities. The process through which this participation is facilitated by World Vision HE/CP staff has been reciprocal, respectful, inclusive and largely effective. Water is an excellent entry point for the beginning of a more integrated rural development process. However, the project also carries an inherent risk of accelerated negative impacts that will be discussed in the section

on environmental sustainability.

In accordance with the recommendation made at the conclusion of the 1989 evaluation of the rural water project, an effective system of pre-drilling assessment and post-drilling facilitation of pump maintenance training and health education and sanitation/community participation activities has begun or is in the process of being implemented in each community where a borehole has been drilled. Team members of this mid-term evaluation sought to determine the extent to which this recommendation had been achieved. Interviews with HE/CP staff, review of documents, and extensive interviews with villagers in over thirty-nine villages reveal that the present strategy has emerged through trial and error and critical evaluation of efforts. Staff members meet regularly to review their documentation and to critically reflect on their efforts. These monitoring efforts were reported to be the primary means by which the team has developed their present strategy and design for health and sanitation education and community participation. The components are described in Attachment 9 (HE/CP Programme of Activities). This chart describes the HE/CP pre- and post-drilling activities, methodologies, participants, materials, and estimated time.

The Kwahu South District villages, where the current project began did not follow the entire strategy that is currently being used. In fact, it was in this district that the major feature of holding start-up workshops emerged as the key to initiating program implementation with full support from all parties involved. After paying a visit to the heads of district institutions and their staff, along with other NGOs active in the same zone, the startup workshop assures positive village entry, community mobilization, cooperation with the hydrologist, and support for the follow-up activities of health and sanitation education, latrine construction, and other educational activities with schools.

The following findings emerged from interviews with HE/CP staff, document analysis, interviews with district government staff, and interviews with villagers in thirty-eight villages:

Documentation

Extensive documentation exists regarding the work of the fifteen staff members of the HE/CP team. Each village contacted has a file that records notes of each visit by a staff member, the content of what was discussed, the decisions made by villagers, and progress made toward the goals of the project. Documentation of all start-up workshops for each of the districts also exists (Attachment 10: List and Details of Workshops).

Staff members of this team spend approximately one-fourth of their time in documentation (based on interviews with staff). None of this documentation, however, is included in the quarterly reports to the Hilton Foundation, and consequently the quarterly reports do not reflect the comprehensive work that has been going on in the "software" portion of the project. Nor is any of this documentation routinely condensed and routed to other NGOs and government agencies (such as the GWSC) with interests in the same geographic or technical

Recommendations:

40. **World Vision should include summaries of the HE/CP activities in quarterly reports to the Hilton Foundation so that a comprehensive picture of the total project will be provided.**

41. **World Vision should find ways to share what it has learned from their experiences with other NGOs and with the government, especially with the Government of Ghana's Water and Sewerage Corporation.**

Strategy for the HE/CP Effort

The strategy of collaborative work with government at the district level, with other NGOs and with traditional rulers, appears to be working well to assure participation at the village level. A systematic examination of village records would enable a critical judgment regarding the extent to which the planned activities of the HE/CP group have been carried out in villages. Such an examination was not possible during this evaluation. Even so, there is an abundance of evidence from village visits to suggest that the strategy is working. For example, villagers can identify members of the HE/CP team by name or by sight who have visited their villages; also, depending on the duration of World Vision involvement, the strategy appears to be progressively implemented. The teams are clearly appreciated at the village level.

Forms of Participation

Interviews with village residents and observations of activities in participating communities in the Ghana Rural Water Project confirm that the involvement of villagers has taken several forms.

As full partners in the decision-making process, members of the community have contributed to the siting of wells, latrines and laundry facilities; facilitated and implemented the health education and pump maintenance activities; and participated in assessing community needs and future development project goals. Through pre-drilling and post-drilling activities, the HE/CP teams have effectively included residents of the target villages in a process that values and encourages inputs from both men and women in each step.

The selection of committee members for the Water and Sanitation Committees, the women's committees, the pump maintenance activities and pump repair training has also taken several forms: appointment by the village chief, election by fellow residents, and volunteers. Individuals identified in these ways constitute the core or key participants. Members of these committees were identified by name for each village visited. In most cases they were all present for the visit, and had been clearly active in the decision-making process.

Communal labor for such projects as clearing the site and providing sand and gravel for the construction of the pumps, latrines and laundry facilities has been a significant contribution and form of participation. The evaluation team observed the products of these efforts at each village.

Financial contributions constitute another means of community participation. Each of the communities has collected through a one-time or, in many instances, a monthly fee assessment, monies that have then been deposited in a local bank for the purpose of purchasing materials needed for the construction and maintenance of the water pumps, laundry facilities, and latrines. In a few cases the chief has taken over the collection of fees. While this has not always been viewed as satisfactory, committees were able to display their records of financial contributions and expenditures to evaluation team members.

Land also has been contributed by the participating communities for the placement of the water and sanitation facilities.

Participation of villagers through contributions of their indigenous knowledge, local traditions, and other practices is essential for the sustainability of these community development efforts. A high level of commitment on the part of the communities has been evident from the many and varied reflections of genuine appreciation for the provision of an accessible source of potable water and significant improvements in health and sanitation.

Effectiveness of Community Participation

The effectiveness of community participation is demonstrated through the high levels of satisfaction with the collaborative interactions with stakeholders within the district government offices and with other NGOs. In the case of Sekyere West, the collaboration with Father Globus, a Dutch Catholic missionary, has been especially fruitful; and in the case of Kwahu South, the collaboration with the Holy Family Hospital outreach unit has enhanced the participation by communities in health and sanitation as well as in the family planning area. As noted elsewhere in this report, World Vision Ghana has an especially strong working relationship with the district government offices in each of the areas in which it is currently operating.

Building on indigenous knowledge, customs and practices is also part of the strategy for community participation that has contributed to its effectiveness. The careful way in which communities are approached, the initial meetings first with district officials, then with village chiefs and elders and with the village as a whole, to introduce the concepts and goals of the program, contribute to enthusiasm and commitment from village residents.

One of the evaluation teams observed a complete drilling operation. Approximately one hundred villagers were present. Four members of the Water and Sanitation Committee assisted the World Vision drillers. Women and children also carried water to clean the drilling equipment and borehole casings. In other villages, residents also had contributed

labor for the construction of latrines. A few had contributed labor for laundry pads. There is strong evidence that villagers have invested extensively in these development improvements. In most villages, large numbers of persons gathered to welcome the evaluation teams, voicing a willingness to continue their input to subsequent efforts.

Selection and training of personnel can account for much of the success of the HE/CP effort. During interviews with staff members, the following characteristics were considered to be desirable for effective staff performance: a) respect for local knowledge; b) willingness to collaborate with traditional leadership; c) capacity to communicate through local languages; d) skill in conducting discussions and teaching without lecturing; e) commitment to empowerment of local leadership; f) willingness to be an advocate for village perspectives with government, World Vision Ghana, and other NGOs; and g) capacity to critically reflect upon one's own work and the flexibility to change.

The HE/CP maintains continuing contacts with local villages and with the district government officials. This will become even more important when other WVG staff (eg, from the Women in Development or the Agricultural units) are mobilized to work in the GRWP targeted communities. Continuity is essential for the purpose of increasing the understanding of and familiarity with the concepts associated with water, health, and sanitation, as well as with community development concepts in general. As the organization moves to the next phase of its work and reshapes its vision for the future of community development activities, its publics (cooperating stakeholders) must be helped to understand the shift in emphasis from a direct role of providing services to a more indirect role as catalyst, collaborator, and facilitator.

While community contributions in terms of local knowledge, materials, labor, and cash to the project have been very high, community participation in terms of demonstrated skills in diagnosis, identification, and prioritization of health and other needs, as well as the identification and utilization of local resources, is not very evident in most communities.

In sum, however, prospects for expanded continuity, sustainability, and collaboration have been enhanced by the effectiveness of community participation in this project.

Recommendations:

42. The evaluation team strongly endorses the HE/CP or "software" components of the GRWP in both the pre- and post-drilling community intervention activities, and recommends the continuation of this effort.

43. The HE/CP team should also "own the goal" of facilitating continuing contacts of various WVG units with communities and local government leaders, for the sake of continuity.

44. **World Vision should continue to implement the concept of the paraprofessional as a means of ensuring continuity of community education/animation at the district level.**

45. **World Vision Ghana should move slowly but deliberately away from the role of service provider towards that of a catalyst for wider integrated development in the communities that have participated in the GRWP.**

46. **Community leadership should be given appropriate training in project planning, operation, management, and supervision to ensure that subsequent development efforts of the community are sustainable.**

Participation of Women:

The current levels of involvement of women are very good in most staffing areas. However, some of the more highly technical areas (e.g., members of the drilling crew, hydrologist, pump repair technicians, and trainers) could become more gender inclusive. The importance of modeling a team approach in which men and women work together as partners in an atmosphere of mutual respect and genuine cooperation should be supported; the parallels to family life are unmistakable. More women staff members should be hired to guarantee that women's voices are heard during the participation process.

Recommendation: 46. Women should be more centrally involved in all levels of the work of World Vision; this includes staff as well as program participants.

Representativeness of Development Committees:

As opportunities in urban centers have become increasingly difficult to find, young men and women from rural areas may begin opting to migrate to other rural communities with greater promise, rather than migrating to urban areas as in the past. Areas where communities are mobilized for development will become prime locations in which to settle down and raise a family. Those intervention programs which continue to emphasize collaborative strategies as the primary means for introducing and sustaining the benefits of development (that is, health and nutrition along with education, skill development, and longterm food/water security), will continue to attract new settlers. However, when migrants from Northern Ghana, Mali, Togo, Burkina Faso, Cote d'Ivoire, Benin and other neighboring countries settle together in Ghanian villages in the Greater Afram Plains area, difficulties in cross-cultural and inter-

ethnic relations often result. No development or communication strategy can afford to ignore these very real differences if the goal is impact which can be measured and sustained. The ideal would be to begin addressing the issues of cultural or ethnic diversity early on, before tensions build and conflict results.

The people in almost all of the communities visited in Kwahu South were quite homogenous. They therefore have fairly similar cultural norms regarding community organization and water usage. However, the people in the villages of Sekyere West were quite heterogeneous, divided into a multiplicity of ethnic groups with varying cultural norms regarding water usage. For the success of the water and sanitation program in Sekyere West, representation on the various development committees should reflect this diversity.

Recommendation: 48. Understanding and valuing cultural diversity should be one of the goals of the HE/CP community-level curriculum for village development committees in those areas with a high proportion of migrant settlers.

WATER AND SANITATION COMMITTEE OPERATION

Roles and Responsibilities

Water and Sanitation Committees in the villages are mainly responsible for the general environmental and personal hygiene within the villages. The extent to which they carry out their role depends on the village. This role involves a host of specific activities:

* Cleanliness Around the Pump and Entire Village: This is monitored by members of the Water and Sanitation committee. Regular sweeping and weeding of the immediate surroundings of pumps are carried out by women, and supervised by the members of the Water and Sanitation committees. The women are also mobilized to regularly sweep and clean entire villages.

* Supervision of Pump and Latrine Usage: Members of Water and Sanitation ensure the proper use of pump and latrine facilities. Some adults and children sometimes misuse pump handles - resulting in damage to the handles. Children are also known to soil latrine floors because of a lack of knowledge of proper use of the facility. Members of Water and Sanitation committees have the responsibility for teaching and supervising the proper use of latrines.

* Inspection of Homes: Some Water and Sanitation members act as sanitary inspectors of homes. Sanctions for poor hygiene can be imposed by the Water and Sanitation committee. The committee also ensures proper storage of water for use in homes.

* Pump Maintenance: When the pumps break down, the Water and Sanitation

committees are to notify the Chief and the pump maintenance volunteers to set to work.

* Fund Raising: Water and Sanitation is also responsible for fund raising for maintenance of pumps and other facilities in their respective communities. This pertains only in the Kwahu South. In the Sekyere West District, the Water and Sanitation committees are not responsible for fund raising.

* Refuse Dump Supervision: Another important activity of the Water and Sanitation committees is the setting up and supervision of community refuse dumps.

Evidence of the Effectiveness of Water and Sanitation Committees:

In almost all the communities that were visited, the pump sites were clean, and the community compounds were reasonably clean. This testifies to the effectiveness of the work of the Water and Sanitation committees. Many of the houses in Kwahu South were reasonably clean, and their occupants knew quite a bit about personal hygiene. They also stored water in clean barrels. This was in marked contrast to some of the villages in Sekyere West where boreholes either had recently been drilled or were yet to be drilled. The effects of health and sanitation efforts were notable by contrast.

Members of the communities, including children in most of the villages, were able to tell the difference between the effects of former water sources and their new sources. It was obvious that learning and assimilation of hygienic practices had taken place. When HE/CP teams teach good health practices to community members, the Water and Sanitation committees on the whole are consistent in following up to ensure that people apply the new knowledge acquired.

Recommendation: 49. The water and sanitation committees should intensify their efforts to have health education provided in schools.

In almost all the communities visited, Water and Sanitation committee members attested to their having acquired management, organizational, and record-keeping skills. However, in order to be fully effective, the training of all committee members in functional literacy, management, accounting, and basic public health is essential. The alternative of placing a paraprofessional on-site longterm in or near each community, using sponsorship funding, may or may not be viable; even this approach, however, would benefit from the addition of such training for committee members.

Recommendation: 50. Training in management skills and functional literacy should be provided to members of the water and sanitation committees, along with accounting skills where necessary.

Long-term sustainability of the efforts of Water and Sanitation committees also depends on:

* Representation of the Water and Sanitation Committee on the Village Unit Committee, the committee that has responsibility for the overall development of the village. Presently, this is not the case in most communities surveyed, as many have yet to form a Village Unit Committee, while others have not yet achieved integration between the two committees.

* Representation of females on Water and Sanitation committees. Women and children are the primary haulers of water, and cleaners of latrines and rubbish disposal facilities. Inclusion of women on Water and Sanitation committees will assure sustainability of the facilities; women have the most to lose if the pump does not work, and they are more likely to see that repairs are made promptly.

* Representation of community diversity on Water and Sanitation committees. In Kwahu South, the people in almost all the communities that were visited were quite homogeneous. This, however, is not the case in Sekyere West. This district is comprised of a multiplicity of ethnic groups (twenty-eight tribes).

Recommendation:

51. Where the Water and Sanitation Committee is NOT currently represented on the Village Unit Committee, the HE/CP should work with community leaders in a sustained and patient effort to establish such representation (or viable alternative).

52. More women should be included on the water and sanitation committees.

48. Understanding and valuing cultural diversity should be one of the goals of the HE/CP community-level curriculum for village development committees in those areas with a high proportion of migrant settlers.

COMMUNITY STRUCTURES:

The evaluation team identified the existence of political, economic, educational and socio-cultural benevolent organizations in most villages, in addition to traditional leaders. Village participation through village committees varies. Some villages have many committees that were reported to be active. In others, committees were virtually non-existent, leaving most decisions up to traditional leaders.

Most villages have a Village Development Committee and a representative on the District Assembly. Villages in the Sekyere West have fewer existing committees and other local organizations. The Committees for the Defense of the Revolution (CDRs) were reported to be most common and very active in the Sekyere West District.

Inter-Organizational Relations:

The GRWP required the formation of Water and Sanitation committees. The relationship of these committees to others in the village was reported to be collaborative. This was probably due to the fact that most Water and Sanitation committee members also are members of other local organizations, and have introduced into the Water and Sanitation committees various techniques and approaches learned in other committee structures.

This interlocking was evidenced by the following figures: Approximately 42% of the villages visited had included representation from all local communities on their Water and Sanitation committees; 33% of the villages had representation from their Village Development Committees on their Water and Sanitation committees; 42% of the Water and Sanitation committees had representation from Committees for the Defense of the Revolution. Only one village did not have organizations or committees other than the Water and Sanitation committee, excluding the governance of the traditional leaders.

Collaboration Benefits:

World Vision is observably intentional in its collaborative approach to development in both the districts visited by the evaluation teams. There was evidence that this approach has worked positively. In several villages, there were reports that the Water and Sanitation committees had revitalized community decision-making beyond that of the village chief. The Water and Sanitation committee experience had helped people in some villages to mobilize, hold meetings, and initiate open speech regarding conditions in the village. World Vision has supported a collaboration between its GRWP, the District Development efforts, and the work of other NGOs. The District workshops that World Vision was instrumental in holding, have strengthened collaboration between traditional leaders, NGOs, and the District Officers. World Vision GRWP vehicles have been used to transport District officials to villages, which has strengthened district relationships with villagers.

There was no evidence from the evaluation teams that World Vision had in any way ignored or bypassed District Officials, local leaders, other NGOs, or the work of village committees that were relevant to the health and sanitation/ community participation aspects of rural development. The Paramount Chief did express some regret that World Vision had not come to him sooner on some issues; however, the sentiment expressed was not anger, but disappointment because he felt he could in that case have been more helpful, especially to pass on his understanding of local culture and village development goals, as well as to mediate any conflict that occurred between village committees and local traditional leaders over the collection of funds for development projects. Collaborators had praise for positive

working relationships with World Vision.

Recommendations: 53. **World Vision should continue its collaborative approach with the various religious and political groups as well as with traditional leaders at both the district and village level.**

PROGRAM IMPACT:

Where wet boreholes have been drilled and staff members of the HE/CP Unit have worked, there is extensive evidence of the impact of the project. The types of impacts include improved health status, improved community life, educational benefits and skills, and increased community self-reliance.

Improved Health Status:

In almost all villages where wet boreholes had been installed, villagers reported a decrease in water borne diseases, especially guinea worm. Other health benefits that were reported included a drop in bilharzia, diarrhea, round worms, and yaws, although all four of these diseases still exist to varying degrees. Two villages reported that a cholera outbreak had occurred in 1990. Deaths numbered one out of fifty in one village, and one out of twenty-six in the other. No cholera has been reported in the last two years. These general health benefits were also confirmed through interviews with the district health officers in Kwahu South and Sekyere West.

Interviews from several villages revealed that they no longer fear the district health inspector. One village reported that the last time the district health inspector came, he found nothing negative to report, so he has not returned. Villages reported that they are much cleaner.

In almost all villages, women reported an improvement in personal hygiene. Children were cleaner and clothes are laundered more regularly.

Improved Community Life:

Villagers reported an increased pride in their villages. Some indicated that family relationships had improved due to less strain in fetching water from long distances.

Another indirect consequence of improved health status is the reported increase of urban visitors to villages due to less health risk and sanitary inconvenience to them and their families. Villagers reported that they were no longer embarrassed to receive guests and visitors. This consequence may strengthen the potential for urban relatives to more actively contribute to rural development of their home villages. It may also bring unwelcome

problems from the city, such as sexually-transmitted diseases including AIDS.

Educational Benefits:

In some villages, parents reported that their children were now on time at school now that they were no longer needed to fetch water long distances from the village.

In other instances evaluation team members were told that women were less tired and had either started in literacy classes or were requesting them to be offered. Some villagers have learned skills associated with the project, including latrine construction, committee leadership, and project record keeping.

Perhaps the most important educational benefit that can have lasting impact on the villages is the understanding of the connection between sanitation and health. In one village the evaluation team observed a level six classroom blackboard outlining a lesson on water borne diseases. An interview with the teacher revealed that lessons had been taught on the relationship between good water and good health. Evaluators asked students if they have had blood in feces. Three-fourths of the class indicated that they had had these symptoms. Four children were asked questions pertaining to what illnesses show such symptoms and how these illnesses are contracted. All four of the children were able to provide correct responses and were able to relate improved health to use of clean water.

Recommendations:

54. World Vision should continue to emphasize the use of schools as a vehicle for health/sanitation/water-use, pump-use, and disease prevention.

55. World Vision should support health and sanitation education efforts with appropriate audio-visuals; examples from British WaterAid are illustrative.

Increased Community Self-Reliance:

Evaluation teams were told in many villages that the water project had provided an impetus for their self-reliance to undertake additional projects. In one community, a dependable supply of water has made possible the production of adobe blocks so that repair of a school could be undertaken. In another instance a village constructed an additional latrine as a matter of pride or community social status without World Vision assistance. A Parent Teachers Association member reported that the GRWP had inspired three communities that had been sharing a school to build separate ones in each of their communities.

The availability of water also may have provided an incentive for former community members, who have had more education and leadership capacity, to return and lead

subsequent improvement efforts. If water can attract the return of youth, an even greater urban-to-rural connection can be established to further rural development.

The funding contribution from villages that is required for GRWP construction has demonstrated to many villages that they have a capacity to assess themselves for collective improvement. A number of proposed projects have emerged. Time will tell whether their self-reliance will rise to meet these desirable goals. The use of traditional communal labor may have reconfirmed the capacity of villages to change.

Changes in Distribution of Workload:

When women have access to potable water that is closer to their villages, they have increased options for the use of their time. If the well is close enough to send children unaccompanied, then women's workload may be shifted to children, thereby allowing women to devote more time to village agriculture or their own personal economic interests. When the water supply was quite distant, sometimes men helped with water carrying. In the villages that now have boreholes, there was no evidence that men carry water. In some villages, it was reported to our evaluation teams that women were now more interested in literacy education as a result of having more time and energy.

Increased Community Aspirations/Expectations:

The evaluation teams reported that providing water and sanitation improvements has raised community aspirations and, to some extent, expectations. When community members were asked if they intended to undertake anything more, they responded with the following list:

- Day care
- Primary and secondary school facility construction or repair
- Teachers for their school
- Improved roads and transportation especially for agricultural products
- Adult literacy programs
- Community centers
- Clinics and immunizations for children
- Nutrition education
- Mid-wife training
- Bushfire prevention
- Emergency health transportation
- Veterinary services
- Agricultural projects
- Soil erosion prevention
- Household latrines
- Income generation activities
- Laundry facilities
- Electricity

Their positive experience in seeing a marked improvement from water and sanitation efforts has led, in some cases, to undertaking other development efforts using self-assessments and volunteer labor. These aspirations can be viewed as windows of opportunity for development efforts. If little else changes, however, discouragement may set in, and it may be some time before the momentum toward positive action returns.

Each of the District Assemblies and Departments of Community Development of Kwahu South and Sekyere West have produced action and budget plans for each of their villages. These plans include estimated costs for making some of the improvements that are listed above as village aspirations. What our evaluation teams were unable to determine from the District interviews is the extent to which District resources would be forthcoming, to follow up on the impetus that had been created through the Startup Workshops.

The following generalizations regarding village expectations are matters of concern:

* Villages have a wide diversity of development priorities. Consensus among villages at the district level was reported regarding water and sanitation being a high priority. There is probably less consensus regarding next major priorities.

* All the villages want and expect further assistance from World Vision. Is this realistic given future WV resources?

* There is jealousy on the part of villages not selected for WV assistance by the District Assemblies. This was reported at the District level.

* Meeting these raised aspirations and expectations will require extensive government and NGO resources, including community development facilitators who know how to encourage community participation. Our evaluation teams did not get the impression that government at the district level had the resources to respond to these raised expectations.

* Villages that have been introduced to child sponsorship may have unrealistic expectations regarding the availability of financial resources from World Vision.

Recommendations: 56. **World Vision should communicate future plans to the District Government early enough that District Development Officers can integrate these efforts with District plans and foster reasonable expectations regarding World Vision's ability to contribute financially.**

57. **World Vision should collaborate with District Development Officers and other NGO's active in the area in seeking**

major donors for specific high priority community development efforts.

GENDER ISSUES:

Women and children are primarily responsible for securing water for the household and for domestic use (for drinking, cooking, bathing, washing, and cleaning) in all of the villages studied as part of this evaluation effort. Women are most often assisted in this task by their children, and in only two villages were men actively involved in securing or transporting water. Since they and their children no longer have to travel many miles for water, the Ghana Rural Water Project is sincerely appreciated and World Vision is thanked profusely for its assistance.

The process of carrying water is quite tedious in Ghana's rural communities since animals and carts or wagons are rarely used. Water is transported in containers that are carried on the heads of individuals who, before World Vision's intervention, were required to travel as far as ten kilometers each way. The enthusiastic expressions of appreciation to World Vision by villagers who have benefitted from the drilling of boreholes are quite genuine.

Benefits According to Gender:

Both men and women in rural Ghana are enthusiastic about the boreholes. They are convinced that there are linkages between clean water, careful sanitation practices, and improved health. Members of the evaluation team were very often told by women in the villages visited that they now have more time for farming, more time to rest, and more time for other domestic responsibilities.

Women are involved in committees within the village structure. They most often have representation on the Water and Sanitation Committee. They indicated in interviews in the villages that they wish to participate in the training for pump maintenance and repair. With the exception of the one community in which women have been trained in pump maintenance and repair, women have been primarily responsible only for cleaning the areas around the pumps and notifying the men when there is a problem with the pump.

Women in the Kwahu South region are increasingly full participants in community development efforts. In the more Moslem areas of Sekyere West, this level of participation largely remains a goal because of cultural constraints and the difficulty of changing attitudes regarding gender role rigidity.

Children are often only able to attend school after the drilling of a borehole. The distances that had to be traveled in order to obtain water often meant that schools were already in session or would have ended for the day by the time children actually completed their daily morning water carrying responsibilities. One village youth rejoiced that he would no longer

have to get caned by the teacher because of his tardiness. Other school children were visibly happy that they would no longer have to miss school.

The part of the evaluation focusing on children (in order to test the hygiene, health, and sanitation education benefits of the GRWP) found through these interviews with school children that they have largely very effectively incorporated the sanitation lessons learned into their daily lives. This is a very important component of the HE/CP activities. The environment is very dusty, especially during the dry season so children very often appeared quite dirty and often could be seen playing in the dirt. The importance of sound sanitation practices with respect to animals, refuse, and latrine construction and use cannot be overemphasized.

Women's Participation:

The finding of an increase in women's participation in community decision-making structures and functions is significant. Women in only two of the villages visited have formed and maintained very active women's groups. It is also the case, however, that in every community visited save one, a water and sanitation committee is operative and includes women as regular members. Women's participation was also seen in every village in Kwahu South in at least one of the following areas: adult literacy training, leadership training, the training of traditional birth attendants, and training in pump maintenance and repair (in two villages only).

Since women have major responsibility for water-related activities, they were asked about their interest in participating in the pump maintenance and repair training sessions. There was quite a lot of enthusiastic interest in this training by women because of their desire to be able to take care of problems with the pump themselves without having to wait until the men who have received this training to be available. This was true for women in villages in both of the regions visited by the evaluation team.

Opportunities for skill acquisition in the areas that allowed women to assume roles as secretary and treasurer of the Water and Sanitation Committee, for example, or of the women's group, were welcomed benefits of the GRWP. In the experience of one village, the person who served as treasurer mishandled monies collected by the village residents for a community development project. This situation could have been avoided, in the view of the villagers, if appropriate training/education had been available to that individual. Women who tended to be less well educated cited this part of the project with a great deal of emphasis.

Role of Women in Pump Maintenance:

The role of women to date has largely been as the users of the pump, the cleaners of the pump, and the carriers of water. In most cases they have not been offered the opportunity to be involved in the repair and maintenance (greasing) of the pump.

This has been seen by World Vision (probably by omission) and by the male power structure of the communities (probably by commission) to be a duty and responsibility of the men.

The problems with this are that the men, in general, are not the users of the pump, and the men are more likely to leave the community, taking their skills with them. It is recommended that more women should be included in these activities. The inclusion of women in the pump maintenance and repair training programme and the teams will also enable the women to become focal points in teaching and monitoring the correct use of the pumps.

In many instances that we witnessed, pumps were being operated with short, rapid, jerky strokes which will greatly accelerate pump wear. It is important that training be given in the correct way to pump (long slow strokes).

Women pump repairers would have a vested interest in the institutionalization of this training.

WVI has not yet trained any women in handpump repair and maintenance.

Recommendation: 20. Communities should be encouraged to have at least one woman in the initial group of pump volunteers that are trained.

Education of Women:

The very high rate of illiteracy among women (and Moslem women in particular) suggests that training opportunities are especially needed and appreciated at the same time that they enhance the sustainability of the social gains made as a result of the Ghana Rural Water Project. The development of basic literacy skills as well as opportunities for greater self-actualization, the building of self-confidence, self-esteem, and other leadership skills are important benefits to these communities. Women's participation in decision-making and in community development activities has increased significantly in those areas of the country where cultural norms permit. In some communities women are not allowed by their husbands to participate fully in community-based activities due to these cultural constraints.

According to a Ghanian proverb, if you educate a man, you've educated an individual, but if you educate a woman, you've educated a nation.

The provision of opportunities for education and skill development among women and children is essential for sustainable development. Whether building on existing skills or developing new ones, the process is furthered as the Health Education and Community Participation team conducts its pre- and post-drilling program activities. This must remain an essential component of the GRWP community intervention strategy. As drilling continues in some villages and as the next phase of laundry and latrine construction activities are more

fully implemented, additional examples of similar benefits can be assessed. It is expected that the effective involvement of women in every aspect of this water and sanitation project will continue.

Recommendation:

46. Women should be more centrally involved in all levels of the work of World Vision; this includes staff as well as program participants.

58. The HE/CP team specifically should continue to encourage the participation of women in every phase of the Ghana Rural Water Project.

59. The GRWP should provide training programs with the women participants specifically in mind.

60. Women should be actively recruited for GRWP vacancies in technical as well as non-technical professional positions, and given priority if qualified.

Income Generation:

Women have been able to increase the amount of attention they can give to income-generating activities. This is another of the outcomes of increased access to portable water and the health education and community development program. Since women are the primary caregivers and nurturers, whenever anyone is ill, it is the woman who must find time to minister to their needs. With the significant increase in the health status of her family, she is free to explore other areas of life, including finding ways of earning money that can be used for children's school fees, implements for enhancing agricultural production, more variety in diet and improved nutrition for her family, or launching an income-generating project, as examples.

It is also one of the by-products of activities by women's groups that in some villages the revival of the traditional practice called Susu has occurred. This cooperative savings strategy is one that was outlined in at least two of the villages. Cooperative farming, procuring and preparing items for market, has also resulted along with discussions about the use of the proceeds for specific community development goals. In one community, the women are saving to build a structure that can be used by the health outreach team from Holy Family Hospital when they come to the village and see patients in a clinic setting.

In another community, men and women are working cooperatively in order to produce a cash crop the proceeds from which will be devoted to a community development project. The men will prepare the land, women will plant, and they will both weed and harvest.

It was in this village that men who are members of the women's group pointed to the need for men to be more centrally involved in family planning education and outreach. Relatedly, improved family relations is another benefit of the GRWP. More effective communication, less conflict, less fatigue, and generally a more cooperative family environment were described in most of the villages surveyed. The implications for family cohesiveness and for population growth are clear and warrant further study.

61. Regular follow-up by the HE/CP team is essential in terms of women's involvement in the community development process, particularly in the planning and implementation of the laundry and latrine construction.

62. Adult literacy is a major priority in terms of enhancing the participation of villagers, for women in particular.

PROGRAMMATIC SUSTAINABILITY:

Sustainability of Community Participation Process:

The sustainability of the community participation process initiated by the GRWP will depend largely upon four factors:

* The ability of World Vision to continue to move from a provision of services role to that of a catalytic mode of operations;

* The extent to which the communities' heightened aspirations and expectations for future development initiatives are fulfilled;

* The extent of women's participation in community decision-making and greater acceptance by men in the village of this involvement;

* The degree of transparency of transactions and the level of accountability provided the community on the use of community levies or assessments.

Catalytic Mode of Operation: The HE/CP strategy has evolved through experience. The strategy is solidly founded on a basis of community participation and appears to be effective. Community involvement commences at the pre-drilling stage, upon the HE/CP team's entry into the community. The community actively participates in the survey assessment and analysis of its needs. The community's participation also continues well beyond the drilling of the borehole. Post drilling activities include: Nomination and selection of community volunteers" for pump maintenance training; collection of materials for drainage and

soakaways; and mobilization of resources for the construction of latrines and laundry facilities.

Villages, however, do not directly participate in decisions regarding which villages within their district are to be included in the GRWP program, nor the number of boreholes to be installed in a village. These decisions are made at the district level.

Heightened Aspirations: The evaluation has revealed a high level of community participation in the GRWP. For the most part, communities have been eager to participate and have lent a substantial and meaningful contribution to the project. An outcome of this participation is a strong sense of accomplishment, as evidenced by the manner in which the evaluators were guided through the village and shown the boreholes and sanitation facilities. The majority of the communities visited enthusiastically voiced their plans for future development of their communities: school constructions, day nurseries, and health posts. Villages view the GRWP activities as a "first step" in a continuing collaborative relationship. Aspirations and expectations for "next steps" run very high. World Vision staff need to be cognizant of these aspirations and expectations lest they become too ambitious. Disappointment can quickly lead to a general apathy, thereby undermining the process toward community self-reliance.

Participation of Women: Women are the keystone to the future development of the communities. There exists solid evidence of women's participation in all nearly all phases of the GRWP. Project management should be commended. Nonetheless, continued emphasis should be placed upon assuring women have a meaningful input in village decision-making as well as greater acceptance by men in the villages of this involvement, particularly in the villages of northern Sekyere West. The introduction of functional literacy training for women and the formation of man-woman HE/CP teams will further strengthen women's participation in project activities, and the community decision-making on the whole.

Transparency of Transactions: The GRWP strategy relies heavily upon community financial contributions for the construction of sanitation facilities and pump maintenance and repair. Contributions are raised in two general manners: (1) levies placed on all adult members of the community; and (2) payment by the Village Chief from his investments. Communities contributed between 6,000 and 280,000 cedis, with an average contribution of 77,200 cedis ($140) per community. The use of community levies is a practice known and generally accepted by the community. However, the concept of collecting funds in advance and banking them for the eventual maintenance, repair, or replacement of community property is new.

Village surveys and interviews conducted during the evaluation suggest that a community's ability to elicit financial contributions from its villagers for development activities is directly related to the level of accountability and degree of transparency of the transaction as viewed by the population. Where these transactions have not been transparent or accountability not forthcoming, villagers have been extremely reluctant to contribute. The sustainability of the pump and sanitation facilities depend largely upon the willingness of the community to meet

these levies. The capital formation and resource mobilization required by the community to meet its other development aspirations and expectations depend equally upon community participation.

Sustainability of the Water and Sanitation Committees:

Strong local institutions are essential for mobilizing human and material resources for development. The GRWP strategy calls for the establishment of village-level Water and Sanitation Committees in all project communities. The responsibilities of these committees include: mobilization of the community for the construction and maintenance of the boreholes/pumps, latrines, laundries, and rubbish disposal facilities; supervision of the water and sanitation facilities; cleanliness of the community; and alerting the Village Chief and pump volunteers to the need for pump maintenance/repair. The evaluation team identified Water and Sanitation Committees in all project communities visited. The Committees were found to be successfully performing their responsibilities, with a few exceptions. The long-term sustainability of these Committees will depend upon:

* Representation of the Water and Sanitation Committee on the Village Unit Committee;

* The extent to which Committee membership encourages the participation of women.

* The extent to which the Committee reflects ethnic diversity within the community;

* The training of Committee members in functional literacy, management, accounting, basic public health, etc.

Representation on the Village Unit Committees: The Village Unit Committee (formerly the Village Development Committee) is the principal committee at the village level under the terms of the present government. Unless the Water and Sanitation Committee is formally recognized by the Village Unit Committee, the Water and Sanitation Committee will have little legitimacy and, therefore, little authority to perform its responsibilities. Many villages have as yet to form their Village Unit Committees, thus the time is ripe for integration.

Women's Participation: Most of Water and Sanitation Committees surveyed during the evaluation were dominated by male representation. Although nearly all committees had at least one female member; most had two or more female representatives. The borehole/pump, laundry, and rubbish disposal facilities are used primarily by women and children. Women are responsible for the general cleanliness of these facilities and the community as a whole. The inclusion of women on the Water and Sanitation Committee is essential to the maintenance of these facilities and thus the sustainability of the same.

Ethnic Diversity: Sekyere West District is comprised of villages of one or more of twenty-eight different tribes, including Moslems, Christians, and Animists. Each of these groups

has its particular cultural norms regarding community organization and water usage. If Water and Sanitation Committees in these villages are to successfully mobilize the population, membership on the Committee must be extended to reflect the diversity.

Literacy and Non-Formal Education: Functional literacy, accompanied by basic skills in management, accounting, reporting, and community education, are essential to the effective functioning of a Water and Sanitation Committee. Without functional literacy, committee members cannot effectively ensure financial accountability or transparency of operations. Illiteracy dictates the use of oral and simple visuals, significantly restraining the promotion of health and sanitation education.

During the evaluation interviews, Committee members attested to having learned important skills in committee organization, meeting procedures, and record keeping. However, they were quick to point out that their membership was comprised of only one or two literate members. More often than not, in each case, the Committee met only when the literate individual(s) was available. Should these members resign or leave the village, Committee activities are very likely to cease. Functional literacy and related training is paramount for all, and especially the Health and Sanitation Committee members.

Sustainability of Health and Sanitation Education:

The impact to be derived from the provision of clean water and sanitation facilities is directly related to the community's understanding of the relationship between clean water and sanitation, and improved health. The evaluation has found that the provision of boreholes and sanitation facilities has led to a dramatic reduction in the incidence of water-borne diseases and illnesses. In the majority of villages personal hygiene has improved and communities are far cleaner than prior to the initiation of project activities. Nonetheless, much remains to be done particularly in the areas of nutrition, infection, and family planning.

World Vision's HE/CP team continues to be an effective catalyst in the promotion of improved community health education. However, the HE/CP team can only do so much. Health education must be intensified if the momentum achieved under the GRWP is to be sustained. Local institutions such as the primary and middle schools offer a captive audience of future village leaders. Teachers must be sensitized to the village's health issues, encouraged to incorporate these issues in their curricula, and equipped with the minimum educational resources required for the delivery of health and sanitation education. Local TBAs and district health authorities must be mobilized, and furnished with the necessary logistical support to provide health and sanitation training to teachers and community leaders. Functional literacy must be extended to the rural population, especially women.

Sustainability of Pump Maintenance and Repair:

The GRWP strategy calls for the use of village "volunteers" to be trained as pump

maintenance and repair technicians. The project has been very successful in eliciting village "volunteers" for training. Two to seven volunteers have been trained per project village in Kwahu South. Training continues in Sekyere West. Volunteers have had little opportunity to practice their skills since pumps have proven very reliable. Although the evaluation did not evaluate the pump maintenance and repair training programme in depth, pump records show that the "volunteers" have maintained and repaired the pumps in a timely and effective manner. The training appears to be adequate.

In a number of villages, trained pump volunteers have left the village permanently or travel extensively. The sustainability of the pump maintenance and repair programme relies heavily upon resident maintenance and repair expertise. The sustainability of pump maintenance can be strengthened by:

* Training women "volunteers";

* Training of "pump maintenance and repair trainers";

* Instituting the "service center" concept;

* Providing each village with its own 19 mm spanner and access to repair tools.

Training of Women: To date, pump volunteers have been virtually all men, and often young men. Men tend to migrate from the village or travel more extensively than women. The evaluation has noted that women were not often considered for pump maintenance and repair training. However, when asked during the evaluation if they wished to volunteer, they generally welcomed the opportunity. In addition to the fact that women remain more often in the village, women are the principle users of the pump and therefore the rightful "goal owners" of pump operations. The sustainability of pump maintenance and repair could be strengthened by the inclusion of women as repair volunteers. The training of women volunteers should take place in the village of residence.

Training of Trainers: If the maintenance and repair objectives are to be sustainable, pump volunteers should be trained to train others. Such training could occur during regular pump maintenance. What would be gained is a multiplier factor, reducing training costs significantly while increasing effectiveness and the likelihood of longterm sustainability.

Service Centers: The concept of a service center for community groups has yet to be operationalized. Although tool sets have been distributed to six service centers, World Vision is still the provider of spare parts. The Kwahu South District Administration has agreed to stock spare parts but arrangements are yet to be finalized. The entire issue of pump standardization and the supply of pumps and parts is under review at the national level. The GOG is currently leaning toward the privatization of pump sales and service. The availability and accessibility of pumps and spare parts lie at the very heart of sustainability. This issue must be aggressively pursued by project management.

Availability of Tools: Some communities have yet to receive their "tool kits", consisting at a minimum of a 19mm wrench and the grease used in routine pump maintenance. Without readily-accessible service centers for tools as well as parts, some communities will remain needlessly dependent on World Vision for pump repair.

Sustainability of Latrines and Laundry Facilities:

Evaluation interviews and observations conducted in twenty-three communities in Kwahu South District, revealed that fifteen of the twenty-three communities surveyed used open pit communal latrines prior to the initiation of GRWP activities. Four communities utilized primarily family latrines and limited "free ranging". The remaining four communities had no latrine facilities. Latrine use by the majority of the population in all project communities appears to be an obtainable objective within the time frame of the GRWP.

The sustainability of the GRWP latrine initiatives hinges on:

* Drafting of a technically sound latrine design;

* Educating of the GRWP Latrine and Laundry Construction unit (LLC) in the theories and principles of latrine design;

* Refocusing of the GRWP Latrine and Laundry Construction unit toward the training of village artisans to construct latrines, as designed.

Latrine Design: The GRWP latrine design presently in use can be improved upon. Technical modifications are required. (The details of this issue are addressed in the hardware section of this report.)

Continuing Education: The LLC unit is comprised of skilled carpenters, masons, and technicians. However, the LLC unit lacks an adequate understanding of the basic concepts of latrine design. The LLC also requires additional training in community mobilization and facilitation, as this approach to development is much more likely to achieve sustainability.

Facilitation vs Extension Approach: The sustainability of the GRWP health and sanitation objectives will not be met by the construction of 800 or 1000 latrines by the LLC unit. Rather, sustainability can be ensured only through the training of community artisans in the principles and practices of latrine design and construction. The LLC unit must be given sufficient training, time, and latitude to effectively train community artisans in a facilitative versus an extension mode. Emphasis on such training over construction may necessitate an amendment to GRWP Latrine construction targets.

Sustainability and Respect for Indigenous Community Social Structure and Customs:

Project interventions that contradict social and cultural patterns have little chance of being

continued after external assistance is withdrawn. Appropriate activities that are grounded in those patterns have a greater chance of being sustained. The GRWP strategy and practice demonstrate a skillful respect for indigenous community social structure, customs, and practices. The GRWP strategy and activities generally recognize and respect the importance and authority of traditional chiefs at the village and regional level, and rely upon traditional patterns of communal organization. The ethnic and religious diversity of the peoples of Sekyere West District may present project management with an interesting challenge, possibly necessitating amendments to the present program strategy.

ENVIRONMENTAL SUSTAINABILITY:

The project design, when it was first conceived, consisted primarily of water supply; the first evaluation resulted in the addition in Phase Two of significant sanitation and education components. The design of Phase Two did not address environmental issues, as these appeared to be secondary if not unrelated. However, it would be shortsighted if Phase Three (if there is one) were to pass over the environmental considerations, given some of the early indicators observed as part of this evaluation exercise. Some aspects of this could be incorporated into Phase Two with minimal additional cost.

Although there is evidence that the provision of water, health education, and sanitation immediately improves the quality of life for villagers, there are a number of environmental concerns and threats in the long term that emerged during the evaluation. Time did not allow for the gathering of data to confirm or disconfirm these concerns. However, the relationship of the project to long-term environmental sustainability should not be ignored. These concerns include effects of land tenure, proposed road improvements, population increase, deforestation, bush fires, livestock increase, soil erosion, traditional farming practices, and urban/rural migration.

These observations, and the associated recommendations, should not be construed to imply that the Phase Two design was flawed, or that the GRWP was negligent in the pursuit of program objectives. Rather, it is the very success of the well-drilling and community participation program which has led to the awareness of these environmental issues. Some issues might possibly be addressed within Phase Two, given the necessary budget resources; other issues would likely be overwhelming for any NGO to address single-handedly.

Land Tenure and Environmental Sustainability:

Two different land tenure situations were reported during visits to Kwahu South and Sekyere West Districts. The villages of the Kwahu South district enjoy land tenure under traditional Kwahu rulers. Meanwhile, the Ashanti chiefs own land rights in Sekyere West District, which they traditionally have considered their hunting grounds (interview with Father Globus, Oku Junction). With the exception of five villages in the south of Sekyere West District, the villages are considered as tenants by the Ashanti chiefs. Interviews in several villages confirmed that farmers pay 1,000 to 1500 Cedis annually. They also reported that

they pay a fee to the District Land Office.

Father Globus, who has conducted population surveys and anthropological data in all these villages, reports that there are twenty-eight different tribes in this area. They are environmental refugees from the north that have come for the most part since 1960. They are 50% Muslim, 30% Christian, and 20% traditional in their religious orientations. They have little psychological links to the land. Father Globus claims that the Ashantis do not have an environmental commitment to the land since they have used it primarily for hunting and logging in the past. Although some of these villages have occupied the Sekyere West District for over thirty years as tenants, the evaluation team is concerned that a lack of land tenure may be contributing to a reduced commitment to land conservation.

Do tenants usually invest in long-term environmental conservation efforts? To what extent do these villagers consider themselves to be permanent residents of the region? There is little evidence that any of them return to the regions from which they have come; yet there is little legal possibility for them to be land owners in the region. The provision of a borehole provides an incentive for permanency. Are there other ways that a commitment to permanency and strong links to the land could be engendered without legal land ownership, or is some more permanent land arrangement such as 100-year leases an essential element in environmental sustainability?

In the past, farmers within the Afram Plains have managed to survive by practicing a "slash and burn" migratory agricultural system. Land was cleared, farmed for several years, and discarded for new lands when productivity declined. The provision of a permanent water source (borehole) will likely lead to a more sedentary lifestyle, thus increasing the pressures on the carrying capacity of the land within a walking radius of the borehole. In evaluation surveys, villagers also acknowledged keeping a larger number of livestock now that a permanent source of water is available and accessible. Greater numbers of livestock in concentrated areas will only further aggravate the situation.

Proposed Road Improvements:

Visits to both District Offices and interviews with villagers provided evidence that road improvement into the interior of Kwahu South and Sekyere West Districts is a high priority (Program of Action and Budget: Kwahu South District). Although improved roads would assist farmers in marketing their produce at a fairer price, it also can accelerate migration into the region and increase logging and extraction of charcoal. Will the improvement of roads lead to an increased environmental threat?

Another potential change that is likely to result from road improvement is the import into rural villages of western urban culture, technology, and possibly new diseases such as AIDS.

Population Increases:

All villages that were visited by the evaluation teams reported an increase of population in conjunction with an improved water supply. The provision of potable water may have contributed to an increase in local birthrates. More children are being born and more are being planned because it is now safer to have childbirth. Fewer children may be dying of diseases due to a better water supply. Children are still valued as farm workers, thus birth reduction is not acceptable to villagers. Some villagers reported that some family members who had left villages may return because water is safe and does not require unbearable time and energy for transport. This raises the question of whether an increased population maintain itself in the region without increasing the probability of further environmental deterioration. Family planning would appear to be an essential component of water projects if environmental degradation is to be slowed or reversed.

Boreholes significantly increase a community's availability and access to clean water. Evaluation data strongly suggest that the provision of clean water is resulting in population growth in villages where boreholes have been provided. In Kwahu South District villagers reported increased birth rates, while in Sekyere West increasing numbers of immigrants are arriving daily from the northern regions of the country. The rapid growth of the rural villages may eventually lead to a lower per capita availability of clean water unless additional boreholes are drilled, especially in Sekyere West.

The increase in birth rates is alarming in that most families in the project communities are finding it extremely difficult to meet the basic needs of their present family members. The time savings incurred by women in the carrying of water may quickly be consumed by an increase in child bearing and care. Lest the provision of clean water lead to a "baby boom" in some villages, World Vision's health/sanitation education follow-up should include a sound family planning component.

Recommendation: **28.** **Family planning education and services should be intensified.**

64. **The population growth in villages of Kwahu South and Sekyere West should be closely monitored, and a comparison should be made between those wherein boreholes have been provided, and those using traditional water sources.**

Deforestation:

In several villages, evidence of recent logging was noted. In these cases villagers did not approve of logging and were uninformed regarding the permit process and whether it was being enforced. In Sekyere West District, villagers were observed producing charcoal for export beyond the region. Some farmers reported that charcoal production was more lucrative than farming. Many bags were observed along roads waiting to be picked up by

buyers. Trucks loaded fourteen feet high make their way out of the Greater Afram Plains to Kumasi and Accra. Boreholes may further contribute to deforestation by concentrating the wood gathering of villagers in the immediate vicinity of these now more permanent villages.

One of the most environmentally disturbing sights to members of the evaluation team was the devastation of bush fires, especially in Sekyere West District. Fires were always within sight. Logs were smoldering; the air was heavy with smoke. Some villagers complained of coughing. Thousands of acres had been burned. It appeared that well over one-half of the area had been burned this season. Most very large old growth trees had charred bases but probably will survive. Young growth trees, however, are less likely to survive, and seedlings do not get a chance to grow to maturity. Biodiversity is reduced. Wildlife is reduced. Bush fires deplete the vegetation just prior to the rainy season, thereby accelerating soil erosion.

The long-term effects of these annual bush fires presents a massive threat to the sustainability of the natural environment. The farmers of the region have long practiced slash-and-burn agriculture. They burn to prepare new land. They burn refuse. They burn to assist in the hunting of animals. Often the burning goes well beyond what was intended. Farmers also reported that they burned around their villages so that fires started by other villages would not burn their village down. Villagers were observed to do nothing to control these bush fires. Most were aware that they could be fined if caught starting a bush fire. Some expressed a sense of fatalism. In two villages, efforts had been made to train a fire fighting crew. They were promised equipment that was never provided by the government. They have disbanded their efforts in spite of the fact that bush fires have reduced the use of much of their farmland. It would take a massive educational effort along with better equipment to control this threat to a sustainable natural environment.

Recommendation 65. An environmental education component should be added to the HE/CP primary school curriculum, in which the destructiveness of bush fires and unsound logging practices is emphasized, and environmentally-friendly alternatives are introduced.

Increased Livestock:

Although no effort was made to count livestock, in a number of villages it was reported during interviews that livestock were increasing. Villages varied regarding the penning or tethering of animals. In one village a livestock prison in the center of the village had been established for stray animals. Fines collected from retrieved animals financed the village's contribution to the project. The increase in livestock presents a potential health hazard if animals are permitted to roam freely and defecate in the streets of the village. Their increase also may reduce the biodiversity of plant life surrounding villages.

Soil Erosion:

Major soil erosion was observed in almost every village. In older villages many buildings had foundations that were knee high above the level of the yard area. Some wall had fallen due to their being undermined by erosion. Villages are swept by the women. They sweep the top soil away. Grass is not permitted to grow. Plants rarely grow at the base of buildings. During the rainy season erosion is accelerated. Farmers in most villages are aware that much of their soil is disappearing. The practice of mounding for yams was widely observed, but other soil conservation practices were not documented. In several villages, people reported that areas that had once been covered with soil were now bare rock.

Traditional Farming Practices:

Much of the project area is characterized by low fertility and shallow humus, especially in the northern areas. During visits to six villages of Kwahu South District and three villages of the Sekyere West Districts, farmers were interviewed about their agricultural practices. They produce maze, yams, and groundnuts. All farmers indicated that they practice shifting cultivation. Burning their fields is common.

Strategies for Environmental Sustainability:

Several strategies come to mind for addressing the major environmental sustainability challenges described above. The first is for World Vision and its collaborators, including universities, to collect existing knowledge regarding environmental conditions and trends in the Greater Afram Plains region. Additional research may need to be conducted in order to project trends or assess impacts from anticipated technological, economic, and social impacts of present trends. The documentation of indigenous knowledge regarding agricultural practices and the treatment of natural resources is essential as a base for launching educational programs for environmental sustainability. Strategic experiments in new energy saving technologies such as stoves, agricultural practices, soil conservation efforts, agroforestry, and family planning are also essential to undertake immediately. Policies on natural resource conservation should be actively put in place, along with compliance education efforts. Traditional leaders, particularly the paramount tribal leaders, must be involved in understanding the severity of present trends and the consequences to their people if strategic steps are not implemented. Their legal authority has been eroded. However, they still have some authority over land and can provide spiritual leadership regarding the ethical issues of the environment.

Recommendation: 66. World Vision should seriously consider adding a natural resources management component to their overall development strategy in the Afram Plains ADP (Area Development Program).

Conclusion:

Is it good that people are migrating into the northern Afram Plains area? Probably not, at least, not in large numbers. However, the people are coming with nowhere else to go. The provision of boreholes, and health and sanitation education is a worthy humanitarian enterprise, but it also is a potentially explosive factor, along with the improvement of roads. To undertake these improvements without addressing threats to the environment is to be developmentally irresponsible and to compound an accelerating environmental deterioration.

MANAGEMENT AND MARKETING TEAM REPORT

Randy Strash
Management and Marketing Team Leader

The Management and Marketing Team was assigned to examine the status of the program in three primary areas of focus as they relate to the effective functioning of the GRWP:

> Management, including grant compliance, grant accounting, internal control, cash flow, procurement, stewardship, structure, staffing, staff development, technical support, evaluation and monitoring, reporting, strategic planning, facilities and integration with the Field Office structure.
>
> Marketing, including fulfillment of match requirements by the World Vision marketing apparatus, performance of sponsorship marketing programs and long-term funding strategies.
>
> Relationships, including with the national and district governments, traditional leadership (chiefs, fetish priests and village councils), other NGO's, various church and parachurch agencies, the World Vision Partnership, and the donor.

MANAGEMENT

Grant Compliance:

GRWP performance was compared point-by-point to the Grant Letter dated August 12, 1991 (see Attachment 11). In general, the project is conscientious in pursuing grant compliance; there are no significant issues to report at this stage.

The project is right on target in spending against plan, after underspending significantly (33%) in FY91. The FY91 spending performance was the result of an intentional delay in the purchase of eight 4WD vehicles, as well as a 40% reduction in the target of wet wells for the start-up year (by agreement with the donor). The level of FY92 underspending was less than 1% against a budget of $1.59 million, so the project cannot be faulted in this regard.

The project is ahead of schedule in the preparation of communities, and slightly ahead of target with reference to the number of wet wells drilled and handpumps installed. Although the rate of latrine construction is behind schedule, this is not necessarily a compliance issue until it becomes obvious that the quota of 2 latrines per community cannot be achieved within the time frame of the grant.

It should be noted that the pace of latrine construction is determined by the communities, not

construction tends to lag behind the drilling operation by about 12 months. Given the natural lag of up to a year between the actual well-drilling and the completion of the latrine/laundry park construction activities (which should not be rushed), not to mention the health education cycle, an extension of the project implementation period is recommended.

Recommendation: 67. The donor should be requested to approve in writing an extension of one year (that is, from a 5-year period to a 6-year period) for the software activities of the GRWP, affecting the matching portion of the grant only.

Several minor points are also noted here for follow-up by the GRWP:

Under Item 7, Point (d), it is required that both wet and dry wells receive a unique number etched into concrete. Field observations have confirmed compliance; however, some of the numbers have not been etched deeply enough to prevent erosion from eventually rendering them unreadable. In order to fully comply with the intent as well as the letter of the contract (no pun intended), we would suggest that the crew responsible for preparing the concrete aprons around the handpumps to be sure to make a good impression (no pun intended).

Recommendation: 68. The crew responsible for preparing the concrete aprons around the handpumps should be sure to make an impression of the unique well number deeply enough to last, or else make the impression in an area unlikely to receive much wear.

Point (e) of Item 7 requires that an iron removal plant be installed where iron content does not meet acceptable standards. However, the excessive iron content in some wells has been attributed to aggressive water acting on the steel rising main, and expert judgment is that the problem is wholly correctible by the installation of stainless steel pipes. A major effort is underway to replace the ordinary steel pipes with stainless steel, after which a determination will be made if any problem wells remain. In any case, the iron removal plant has only recently completed its testing phase, and so will not be available for installation for several months.

Point 8 requires that 2 latrines of "KVIP or equal quality" be installed in each community. The phrase "equal quality" is somewhat ambiguous, as it is unclear whether it is the type of construction materials which is in view, or the degree of utility, sanitation and odor-control performance (although, for the record, Mr. Steve Hilton clarified to the Evaluation Team that it is the function, not the form, which is in view in this clause). The project has assumed the latter, as the KVIP design is often too expensive for the average community to afford even one, let alone two.

Recommendation: 69. The meaning of the phrase "KVIP or equal quality" should be clarified in writing with the donor.

On the matter of maintenance stations (Item 9), the project has been forced to adjust its approach due to the government's strategy of privatization. The Project Manager has agreed to articulate the revised concept for the sake of the donor's understanding. In brief, the new approach is based on a District-level resource center model, instead of the maintenance station model initially described. The GRWP will need to revisit this issue, as a decentralized approach still makes the most sense, and the GRWP is not the ideal agent to maintain permanent service centers across the country. Nevertheless, WV has accepted responsibilty for the proper functioning of the system, and will therefore need to continue to "own the goal". An appropriate solution may require establishing new agreements with the various levels of government, making sure that any commitments are real rather than merely political statements, and that they are fully coordinated with other offices having jurisdiction over the associated government resources.

Recommendation 70. The GRWP should maintain temporary service centers in decentralized locations, while simultaneously pursuing agreements with the Government of Ghana establishing longterm responsibility for the maintenance stations.

Grant Accounting:

The GRWP Grant Accountant is skilled and conscientious in his work, frequently working late into the night and on Saturdays to complete the necessary tasks in timely fashion. The purchase of SunSystems software should render his task much easier; training and installation should be complete by end-February. The most cumbersome aspect of the current manual system is obtaining a correct trial balance after numerous entries, spread over 8 accounts and 14 subaccounts, and accumulated over a full quarter of financial activity. Twenty accounts is generally acknowledged to be the maximum number of accounts that can be handled efficiently in a manual system for a project of this size. The new software should simplify this man's task tremendously.

The annual audits have not turned up any adverse findings in the area of grant accounting, although the last audit did recommend (in addition to automation) an alternative approach to the handling of the large and numerous cash advances to field staff while on the 3-week drill crew rotation. This has been addressed by establishing a 3 million cedi ($5000) imprest account last October, which so far has been working quite well. A full-time accountant handles the imprest fund at the camp site, moving with the drill crew to each new location. There have been no complaints, and an on-site inspection, although cursory, determined that the site-level accounting and administration is being competently handled.

The only concern relates to the potential risk of carrying large sums of cash from Accra up to the camp site by the field-based accountant. It is unwise to continue placing GRWP staff at risk. A possible solution is to open a project bank account in Mampong, reducing greatly the distance that must be covered while carrying project cash.

Recommendation: 71. The GRWP should consider the merits of opening a bank account closer to the site of field operations.

Internal Control:

GRWP Authority Limits have established strict controls on approval of budgeted expenditures. Only five individuals can approve Purchase Requisitions and Check Requests for the GRWP: The Grant Accountant ($5000), the Pump Maintenance Manager ($5000), the Project Manager ($10,000), the Field Office Associate Director for Finance ($10,000) and the Field Director (more than $10,000). All checks require 2 signatories. In practice, this means that either the Project Manager or the Grant Accountant sees every check request, and the Field Director all requests over $5000. This is not considered to be an excessive burden on the Project Manager or the Grant Accountant, although their burden of work does need to lightened in other ways for optimum performance in their respective areas.

The current Procurement Control System was developed in January 1991 by a professional purchasing agent, who came to the project from a large industrial holding company. All purchase requests require a completed Purchase Request Voucher form signed by the appropriate manager; 3 pro-forma invoices or quotes from source, for all line items exceeding $100; a Purchase Analysis Form recommending a vendor for each item on the request; approval by the appropriate authority; and a check request (or petty cash voucher) also signed by the same and the next higher authority.

Since the system was established, in only one instance was a minor purchase made from petty cash without the appropriate approvals, and a reprimand was immediately forthcoming from the Project Manager.

Prices of purchases made by the Assistant are spot-checked by the Procurement Manager to detect assure that the best prices are being obtained, and also to forestall any possible kick-back arrangements between vendors and the Assistant. All in all, it appears to be a very effective control system, with no complaints by either Finance or Operations that the system is too restrictive or confining.

We do not have any recommendations for improving the existing procurement control system, unless it be a suggestion to relax somewhat the requirement for obtaining 3 quotes for all line items totalling $100 or more. Some suppliers do not have price lists because of the volatility of the market, and they are often reluctant to provide quotes unless the project

has made a number of purchases there in the past or appears likely to do so in future. Perhaps the threshold could be increased to $200 to ease the burden on the purchasing staff; the AD/Finance would need to decide this issue.

Recommendation: 72. The GRWP Finance should examine the merits of relaxing the requirement for obtaining 3 quotes for line items totalling $100 or more.

The Stock Control System is similarly rigorous -- perhaps moreso. Pre-numbered vouchers (Requisition, Receipt, Issue, and Waybill) are used in duplicate or triplicate to ensure a virtually air-tight system. All stores are kept under lock and key, except the very bulky items which cannot fit inside the stockroom (eg, stacks of lumber and 20-foot lengths of 4-inch PVC pipe). The Stores Manager controls the only key, and he locks up dutifully anytime he leaves his office, even for a short absence. (He once managed the Ordnance Supply Depot for the Ghanaian Army; this may account in part for the care he takes in protecting the inventory). Round-the-clock yard and gate security is also maintained, double-staffed at night.

No losses to suspicious causes have been recorded since the function was established, nor have there been any attempts at forced entry. Stock audits are nevertheless conducted quarterly. Minor discrepancies noted between bin cards and actual inventory have been invariably resolved, and are attributed almost entirely to slips of the pen or of the memory in recording part numbers.

The stock control system is judged to be of the highest caliber, and no recommendations for improvement are needed. Little would be gained by automating, and much could be lost due to power outtages and computer down-time at critical moments, such as when the drill crew is in town for a few days preparing for the next rotation.

It appears, however, that the site-based Finance Assistant (living and working in the camp up-country established for the drilling-crew) has become inconsistent in logging in the deliveries as required, and in keeping up to date on other stock records. This is the only weak link in what is otherwise a very strong chain.

Recommendation: 73. The site-based accountant should more closely supervise the work of the Assistant at the field site who is charged with logging in the deliveries of supplies coming to the camp from Accra.

Cash Flow:

The present system relies on a 12-month forecast of monthly cash needs, updated quarterly based on actual position at quarter's end. This has worked reasonably well, with only one

exception (recent) when the Associate Director for Finance was forced to delay funding to a number of other projects in order to meet an unexpected $12,000 cash deficit of the GRWP. The Grant Accountant has been requested to update the AD/Finance monthly instead of quarterly to avoid repetition.

Procurement:

The Procurement Office has shown itself to be effective in obtaining required equipment, parts and supplies from local suppliers in a cost-conscious and timely manner. The Project Manager has been pleased with the service provided to date. A few significant delays have been experienced by the project, however, due to international procurement difficulties.

The most crucial delay incurred by the project to date stemmed not from faulty performance by the Procurement Office, but from a lack awareness of the opportunity costs involved. It happened that both drill rigs suffered a breakdown of the same complex part (transfer gear box) and only one replacement unit was in stock. The project investigated standard delivery time of the part in question from the manufacturer in Sweden (Atlas Copco), but opted to have the part manufactured locally on the basis of an earlier projected delivery date. However, because delays were experienced in the local manufacture of the part, one drill rig sat idle for 3 months.

In retrospect, it might have been possible to secure the services of our Europe office in negotiating for a special dispensation from the original manufacturer (even if it meant paying a higher price for the part); or even for the Project Manager to have made a special trip to Atlas Copco to secure the item off the assembly line and bring it back as accompanied freight. This would have reduced the down-time of the second rig substatially and obtained some utility from the idle drill crew, whose salaries represented a sunk cost. The delay caused the project to operate in a rush mode for the remainder of the year, in order to achieve the quota of 120 wet wells.

Another notable delay occurred as a result of late delivery of an order of pumps, which would have arrived none too soon had they been delivered on time. The project was testing another supplier of the India Mark II pump with an order of several dozen pumps. The project had noted a higher-than-expected pump failure rate as a result of substandard materials used in the manufacture of conecting rods and the rise main connector threads; the manufacturer of choice, however, was reluctant to upgrade. The new supplier indeed provided a better pump, but delivery time doubled from three months to six. Needless to say, the project opted to return to the original supplier and stock higher-quality replacement parts instead. The Procurement Office is also doing a better job of keeping ahead of its pump orders.

Other minor problems occurred earlier on but were quickly corrected. One such problem was the fact that air-shipped goods ordered through WVI's purchasing unit often preceded the arrival of the shipping documents, which were sent separately by the weekly air courier

DHL. This resulted in the project incurring needless demurrage charges. The International Purchasing Department was alerted to the problem, and since then the shipping documents have preceded the delivery of the order.

A similar problem with gift-in-kind shipments from WVRD's GIK Department was identified and corrected early on in Phase II of the program. In this case, the shipping documents did not precisely match the packing list, again holding up clearance and incurring needless expense. The need for accuracy was reinforced to the Shipping Coordinator of WVRD and the problem has not been repeated since.

However, a new wrinkle later appeared when the WVRD GIK office sent photostatic copies of the Bill of Lading instead of a signed original; again demurrage fees were incurred, and an urgent message dispatched to the shipping office.

The Procurement Office has indicated that trans-shipment through Europe often results in needless delays in deliveries. Frequently, orders will be held up in Europe due to strikes or backlogs of freight in transit. Further, in such cases the project is unable to use the original Bill of Lading sent by WVI Purchasing, and must await the arrival of appropriate documents from the new shipper; many times, these documents are late -- sometimes inordinately so. The GRWP Procurement Office has provided WVI Purchasing with a list of shippers which have established direct (or nearly direct) routes to Tema or Takoradi in Ghana, bypassing Europe entirely.

The WVG Procurement Officer also suggested that WVI Purchasing should investigate the advantages of an arrangement with a cargo airline for the Ghana delivery route, rather than the passenger airlines customarily employed by the WVI Purchasing Office; there may be both price and performance advantages, given the volume of orders processed for the project.

Recommendation:

74. WVI Purchasing should avoid trans-shipment to Ghana through Europe, where practical.

75. WVI Purchasing should investigate the advantages of an arrangement with a cargo airline for the Ghana delivery route, rather than the passenger airlines customarily employed by the WVI Purchasing Office.

Stewardship:

In general, the project management and staff appear to be satisfactorily cost-conscious.

For example, the Grant Accountant noted a high incidence of broken springs in project pickup trucks, and concluded the vehicles were probably operating overloaded, given the

very poor road conditions. (Overloaded vehicles are a frequent sight in Ghana, the result of a misguided effort by commercial carriers to maximize profits in the short term.) Drivers were cautioned against overloading, but the inordinate repair frequency continued only slightly abated. Finally the project required drivers who habitually overloaded their vehicles to pay for actual costs of replacement parts installed by the GRWP garage (not including labor and overhead). This has had a noticeable impact on repair bills!

There has also been a conscientious attempt to maximize the use of project vehicles. Bush trips are scheduled and communicated in such a way that on only rare occasions will a vehicle depart carrying only one or two passengers. The Purchasing Assistant is required to use a bicycle or public transport to pick up small items in town, and a vehicle makes a shopping run only when the Procurement Officer judges that bulky or heavy purchases have accumulated sufficiently (or are sufficiently urgent) to make a trip worthwhile.

The project similarly demonstrates cost-consciousness when placing international phone calls to a World Vision office in Europe or the USA. The project office politely requests the other office to ring back, since it is on average 3 or 4 times as expensive for the project to call as for the other office. Most of its communications are via telefax, and with the recent installation of CC:mail software in the Field Office, international communications costs may be reduced by a factor of 10 or more.

An area that is being reviewed by project management is the rather indiscriminate use of film by untrained camera operators in the field. Many of the pictures are useless for communications purposes, and even those that are potentially useful for marketing often merely duplicate photos already on file at Support Offices. The recently-established Documentation Unit of the GRWP will be taking this issue in hand, and limit camera and film use to trained operators.

All of this is highly commendable. However, there are some areas where additional cost savings could be realized, besides the obvious one of reducing the number of dry wells.

One such area is in the management of the vehicle fleet size and in the number of miles traveled. While individual vehicle use is efficiently programmed, there may be ways to trade off some vehicle costs by increasing the number of site-based project staff. A rough estimate of the annual cost of a project 4WD vehicle is about $12,000 (5-year amortization, repair and operating costs, driver-mechanic). This compares to a cost of about $4000 to keep one staff member at a given project site for a year. By locating staff closer to the work, the vehicle operating and repair costs can be expected to drop sharply, and vehicle life will also be extended.

Recommendation: 76. The GRWP should conduct a cost/benefit analysis of locating staff closer to the work, versus maintaining current levels of vehicle traffic.

Another area where additional cost-savings could be realized would be in maximizing the use of local resources available at the camp site. Instead of hiring Accra-based workers who must be cycled in and out of the project site, the project should hire contract staff who live much closer to the area of operations. (Presently, the project employs only 7 casual laborers hired from the area of current operations). Also, instead of buying food and supplies in Accra and trucking them to the project site, some items could be purchased at significantly lower prices locally, or else local substitutes could be found to accomplish the same function at a fraction of the cost.

Recommendations: 77. The GRWP should reexamine its staffing plan to determine whether it would be cost-effective to hire more casual laborers (short-term contracts) at the field sites.

78. The camp-based Administrator should review purchase requisitions to ensure that requested items (or alternatives) are not available more cheaply from local sources.

Still another area where savings could be realized is in international communications, particularly the use of DHL and faxes. There appears to be an inordinate use of the Fax machine in particular, especially for sending the lengthy quarterly reports to WVI and WVUS. Frequently the requesting manager is unaware of the high associated costs because it is the Grant Accountant or the AD/Finance who sees the bills.

Recommendation: 79. The secretarial staff should be encouraged to question the urgency of a lengthy fax (over 10 pages), or the wisdom of sending a DHL package if only one or two pieces of correspondence have accumulated for the weekly courier.

One last labor-saving suggestion has to do with the preparation of the GRWP reports, which are currently typewritten. Because of the length of these reports and the need to edit them at the Support Office level, WV would see significant savings of effort if these were done on a word processor (using WordPerfect 5.1) rather than on a typewriter. The entire text could be sent by DHL in the form of a 3 1/2 inch diskette, or by cc:Mail, rather than by hard copy.

Recommendation: 80. The secretarial staff should be trained to use WordPerfect 5.1 and send all reports destined for an external audience in this format.

Structure:

The GRWP Manager reports to the Associate Director for Field Ministries. He is also a member of the Senior Management Team of the Field Office, and so has regular access to the Field Director and the other senior managers (AD/Finance, AD/Human Resources and Administration, and AD/Field Ministries; also the Technical Support Services Manager, who sits in as an observer).

Reporting directly to the Project Manager in a staff role are 4 positions (Grant Accountant, Procurement Manager, Plant & Vehicle Maintenance Manager, and Administration Officer) with an additional 5 staff positions reporting down-line (see Organizational Chart).

Reporting directly to the Project Manager in a line role are 5 managers (Field Operations, Pump Maintenance & Training, Health Education/Community Participation, Water Resources, and Laundry & Latrine Construction) with an additional 2 staff and 11 managers reporting down-line (see Chart).

This means the Project Manager's span of control is 9, compared to the theoretical limit of 7 for an operational unit. One may expect the PM to be overwhelmed at times by demands for his attention. In actual practice, the Grant Accountant has from necessity been supervising the day-to-day activities of the Administration Officer and Procurement Manager. In addition, the Project Manager has recently created 4 cross-functional management teams (Management, Field Operations, Sanitation and Information Management) to help him keep on top of the enormous demands for his time; this also has relieved a certain amount of pressure.

One option for futher relieving the burden of supervision now on the Project Manager would be to move the Documentation Unit out from under the Water Resources Unit, and to have the Documentation Manager take responsibility for the Administration Officer and Secretary, as well as the two writers.

Recommendation:

81. The Project Manager should seek to reduce his span of control to 5 or 6.

82. The Project Manager should investigate the merits of formalizing the ad hoc supervisory role of the Grant Accountant and the proposed office management role of the Documentation Manager.

The Laundry & Latrine Construction, currently an independent unit, is not functioning as well as it should in its present configuration. This has been established independently by the HWT as well as by the MMT. The LLC team needs supervision both from a technical perspective and a development process perspective.

We suggest as one option that the Project Manager consider assigning 4-5 Laundry & Latrine Construction contract staff to the HE/CP (to take advantage of the community process skills inherent in that team), and the rest of the unit be grouped with the other construction functions of the GRWP under the Pump Maintenance and Training group (necessitating a name change). A second option would be to leave the LLC structure in place, but seek an LLC manager with a completely different set of skills (ie, community mobilization and training vs construction). The LLC would then be expected to work hand-in-glove with the HE/CP team.

Recommendation: **83.** **Either the Technical Support Service Unit or the Water Resources Unit should accept responsibility for technical supervision of community latrine construction efforts.**

84. **The Project Manager should consider the merits of assigning 4-5 Laundry & Latrine Construction contract staff to the HE/CP, and grouping the rest of the LLC unit with the other construction functions of the GRWP.**

The Water Resources Unit currently functions in an advisory capacity, especially the Accra-based position. A significant proportion of its work is geared towards sponsorship-funded activities outside the scope of the GRWP (currently, 60% of the Water Resources Unit Manager's time is allocated to providing the sponsorship project communities with alternative water supply); and yet the costs of this unit are assigned to the GRWP. There is no one else attending to the needs of "dry" communities (GRWP communities where wells have failed to produce sufficient flows of potable water). The key is for the Water Resources unit to be expanded so that it is able to assist in a timely way those communities which clearly need an alternative to the borehole.

The two hydrogeologists of the Water Resources Unit are indeed performing GRWP-related functions, but their effectiveness must be improved dramatically in order to reduce the significant costs associated with each dry well. The Project Manager, who has shown himself to be quite adept in this area, might move this unit into his office, thereby allowing closer interaction. However, this is not actually necessary, as the Water Resources unit has the potential to perform with excellence in its current configuration as long as the PM has access to the hydrogeologists. While we would not presume to dictate the structure, we do recommend any combination of structural adjustments which would free the Project Manager to focus on the problem of reducing the ratio of dry wells to wet. We encourage the Project Manager to spend significantly more time in mentoring the two hydrogeologists on the Water Resources team. Secondly, we would recommend that the Water Resources Unit dedicate its energies more fully to alternative sources of water in "dry" communities; (we understand this may require the addition of 1 or 2 positions).

Recommendations: **85. The Project Manager should develop a number of options for GRWP structure with the intent of freeing up his time to focus on the problem of reducing the ratio of dry wells to wet.**

86. The Project Manager should spend significantly more time in mentoring the two hydrogeologists on the Water Resources team.

30. The GRWP should hire at least one additional technical staff person to be assigned to the Water Resources Unit; this person should dedicate 100% of his/her time to following up "dry" communities on-site.

Staffing:

The project has not had a staffing problem to this date; Ghana is blessed with an abundant pool of skilled and semi-skilled labor. In addition, the Field Office Human Resources department has proven itself adept in recruiting and retaining qualified staff. The GRWP employs 88 contract staff (of which 56 are in field locations) and 8 permanent staff (seconded from the Field Office). Turnover is very low; currently there are only 2 vacancies.

However, recently a few key prospects were lost to the Field Office because World Vision's salary scale is not as competitive as it was earlier in the year. This is due to the fact that salaries are tied to an annual survey, and Ghana's economy has suffered a recent setback.

The practice of adjusting salaries once a year based on a salary survey was only recently instituted, in response to a recommendation by the International Human Resources Department as a means of assuring internal equity and "reasonable and customary" remuneration. While an annual review is standard HR practice in the West, the Ghana economy is more volatile than most Western economies, justifying more frequent adjustments. (It should also be noted that even in the more stable economies of the West, semi-annual salary reviews are fairly commonplace.) Indexing salary increments to the local economy would not only keep salary ranges internally equitable (without adding an excessive administrative burden), but it would also help maintain external competitiveness year-round -- not simply at the beginning of the fiscal year.

Recommendation: **87. The WVG AD/Human Resources should consider adding one or more mid-year reviews of the GRWP pay scale, tied to an index which accounts for the net impact of inflation rates and exchange rate differentials; several options should be submitted to IO/HRD for comment.**

With a program of water supply and sanitation of the size envisaged by the GRWP, it would seem to be a serious omission that the project has not hired a Public Health or Environmental Health specialist, or at least a sanitation engineer, as part of the Technical Support Services or Water Resources Unit.

A Public Health/Environmental Health specialist would be responsible for overall quality of the various latrine and laundry facility designs, as well as the identification of typical construction flaws and remedies. If the objective is to help the communities to construct their own latrines in an effective, economic and sustainable manner, World Vision should not be dictating the form of the latrine but offering realistic options. In addition, the monitoring function would be vital to establishing whether community usage patterns will lead towards achieving the anticipated health benefits. It is particularly important that WV know if children are using the latrines, for example, since they are the most vulnerable, they are virtually confined to the village boundaries, and they represent next generation.

Recommendation: 38. A technical person, preferably a Public Health specialist, should be added to the Water Resources Unit or or Technical Support Services to cover technical aspects of sanitation and environmental health.

The staff of the GRWP can be viewed as a sustainable human resource. The collective training and experience on the job render them valuable assets for the ongoing development of the country. Given the need for potable water in Ghana, it would be a waste of resources to disband the present drilling teams following the current project. Efforts should be made to keep the well-drilling teams together so that their expertise and efficiency could be put to additional well drilling in other parts of Ghana either under World Vision or under some other organizational auspices. The same principle holds for the training and experience of the HE/CP staff, which should be continued intact as much as possible.

Recommendation: 88. Efforts should be made to keep the well-drilling and HE/CP teams together after the end of the current grant, so that their expertise and efficiency could be put to good use in other parts of Ghana, either under World Vision or under the auspices of some other organization.

Staff Development and Training:

The Field Office (AD/Administration & Human Resources) has been given responsibility for staff training and development within WV Ghana, including within GRWP (see attached summary of training provided). Some 90 WV staff have benefitted from 19 workshops and University courses within the last 2 years alone, lasting anywhwere from 1 day (driver's

safety for 20 driver-mechanics) to a full year (MSc in Economic Development from University College of Swansea for the Head of Operations, using a British Council Award of L12,000). At least 16 of those receiving training were directly associated with the GRWP (not counting driver-mechanics and clerical staff).

While GRWP staff (particularly permanent versus contract staff) expressed general disappointment or dissatisfaction with the type of training opportunities available, our perception is that the training provided is appropriate and adequate, when viewed from the perspective of need and when compared to what is typically available from other NGO's operating in-country.

We acknowledge, however, that the staff development practices of private and government agencies in Ghana have contributed to raised expectations by World Vision staff for certificates and university degrees, including graduate studies in the West. Many GRWP and Field Office staff have fallen into the habit of comparing their situations unfavorably to those of former colleagues who have remained in the private or government institutions from which they were recruited by World Vision.

We also note that the Evaluation has uncovered some significant performance gaps (particularly on the LLC team, but also in other areas) which are correctable through training. These areas ought to receive priority attention in the GRWP training strategy.

Recommendation: **89.** **Since the budget cannot sustain significant inceases in training expenditures, the issue of training expectations should be addressed appropriately by the AD/Human Resources and/or the Field Director, because of its effect on morale.**

90. **The GRWP Project Manager should review any performance gaps revealed through this and any subsequent evaluations, and develop jointly with the AD/Field Ministries and the AD/Human Resources a cost-effective training strategy that appropriately addresses these gaps.**

Technical Support:

There appears to be only a weak linkage between the line management involved in the implementation of the GRWP and the Technical Support Services Unit.

Observations made in the field seem to indicate that the Water Resouces Unit manager (who is also the TSS Manager for the National Office) has not felt that it was part of his role to

monitor the technical and functional adequacy of the latrines. When interviewed, he confirmed that this was the responsibility of the Latrine and Laundry Construction Manager, who was carrying out his duties by visiting all the communities where latrines and laundry facilities were being built.

Unfortunately, no one in addition to the Laundry and Latrine Construction Manager had a mandate to spot-check the quality of the final product, or to examine latrine usage patterns. While the Construction Manager was deeply involved in the actual construction of the latrines, he seems to have grasped issues of form better than issues of function (ie, the technicalities of the superstructure of the building itself, versus the points related to siting of the building, safety precautions, ventilation, lighting, space requirements, odor control and cummunity preferences). As a result, many latrines display obvious design flaws which could have been spotted early on by a consultant with expertise in this area.

Ideally, cross-functional support from TSS should have caught this earlier. Even if TSS did not feel that they had the technical capability in-house, they could readily have brought it in from the Kumasi Training Center. Dr. James Monney, for instance, had already run a basic sanitation workshop for them; he could have been engaged for a series of inspections, and a follow-up training seminar.

Another area where additional support is needed either from TSS or the Water Resources Unit is in Alternative Water Sources. While the design of the project tends to lead towards drilled wells with handpumps as the solution of choice, it does allow other forms of water supply to be substituted where the drilled well is not suitable. We believe that the Hilton Foundation would not have any objections if the GRWP were to increase the level of its human and financial resources allocated to communities requiring alternative solutions.

It seems that the TSS (or Water Resources, which is virtually the same thing) have not been very assertive in providing examples of alternative water sources as part of the pre-drilling activities in the communities. The drilling team, for their part, have not been prepared to admit defeat very quickly and call in their help. While the Water Resources Unit awaits the arrival of the hydrofracturing unit (still not operational due to delays in scheduling training in the use of the equipment), followed if necessary by the GWSC geophysical survey (which is almost certain to be slow in arriving), the goodwill of some of the "dry" communities is slowly evaporating. And while the HE/CP team faithfully schedules follow-up of communities where handpumps have been installed, the "dry" communities are completely overlooked. The PM can help here by indicating the level of priority to be assigned to this task, which otherwise is naturally seen as peripheral to the roles assigned to each unit.

If this is to change, as indeed it must, it will clearly require expansion of the HE/CP team, which has its hands full already. However, this could be done fairly easily and quite cheaply by doubling the number of paraprofessionals from 4 (1 actual, 3 in training) to 8, according to the HE/CP Unit manager; no new vehicles would be required under this scenario.

It is clear that the Water Resources Unit would also need an additional person or two to focus on the 20-30 communities each year where well-drilling proves to be unfruitful. Such a person will not come fully-trained and experienced, since there is no such class of professionals in Ghana, at any rate. However, it may be possible to find a young hydrologist, hydrogeologist or civil engineer with good community, visualization and manual skills, who could be trained by the Water Resources manager. Such an individual would be hired on contract to the GRWP, and devote 100% of his/her time to working with 15-20 waterless communities per year to help them develop alternatives water sources. It would even be justifiable from the perspective of cost-effectiveness for such a person to stay with a given community for quite a long time, when compared with the alternative of bringing the drill crew back for another series of dry wells.

Recommendations:

30. The GRWP should hire at least one additional technical staff person to be assigned to the Water Resources Unit; this person should dedicate 100% of his/her time to following up "dry" communities on-site.

31. The HE/CP team should accept responsibility for community monitoring and followup in "dry communities" as well as "wet" ones; this would seem to require increased staffing levels for the HE/CP team.

Documentation and Reporting:

The project reports quarterly to the donor via the WVUS Support Office; an annual report is also generated. In addition, a twice-monthly update of wet wells drilled and latrines constructed was requested last year when the project fell behind schedule; that requirement has been rescinded in the new fiscal year, since the project not only achieved quota but surpassed it.

The typewritten quarterly report consists of an Executive Summary, followed by a narrative report on well-drilling, HE/CP, Pump Maintenance and Training, and sanitation activities. Then follows a list of objectives for the next quarter, and an explanation of variances from budget which appear in the lengthy quarterly grant financial report. Also, in compliance with the grant, tables are attached showing the location and status of wells drilled and latrines constructed during the reporting period, and a series of maps showing proposed well sites for the next quarter. The average quarterly report is 60 pages in length, and the annual report (same basic format) is slightly longer.

The WVUS Support Office (National Accounts), then submits the report to Word Processing to facilitate editing (WVUS Word Processing has a scanner which facilitates transcription). Financial reports are adjusted to reflect Support Office spending, funding and interest earned;

wording is edited for readability. Attachments are passed on unaltered, although the annual report may contain additional narrative or tables obtained from other sources judged to be of interest to the donor.

A recent change in structure has relieved the Project Manager of the need to personally compile and write the quarterly and annual reports. This 3-person unit will also provide marketing services for the WVUS Support Office and the Field Office, although 100% of these costs have been charged to the project from the beginning of the new fiscal year. It will also help the software team write up its issues and success stories (an element of reporting somewhat neglected to date).

Recommendations: 91. **The format and content of the quarterly report should be reviewed with the donor, to enable the Hilton Foundation to acquire a more complete picture of project progress and obstacles; in particular, we recommend that the "software" elements of the program receive greater visibility.**

80. **The secretarial staff should be trained to use WordPerfect 5.1 and send all reports destined for an external audience in this format.**

The project is definitely not under-documented. Other documentation includes annual Project Information Management forms, Operating Plan and Budget documents, Detailed Implementation Plans, Organizations Charts, and Schedules of Activity, along with evaluation reports, audit reports, workshop reports, monthly financial reports, cash flow projections, minutes of key meetings, maps (including hand-drawn where store-bought are unavailable), correspondence, charts, tables, graphs, drilling logs and logs of project workers -- not to mention all the documentation available from the Procurement, Stocks and Field Office Communications units.

There is plenty to keep a documentation team busy; the challenge is to determine what kinds of documentation are essential to the project (as opposed to what may be merely useful), and to cut back if proportionately too many resources are being allocated to this function. It is beyond the purview of this particular evaluation, however, to do more than simply suggest this as a potentially useful exercise.

Recommendation: 92. **The Project Manager should assign the Grant Accountant (who has cost accounting experience) to team up with the members of the Documentation Unit to determine where the project may be over-documented, and propose appropriate adjustments.**

Strategic Planning:

The project is already thinking ahead to the next 5-year plan, and has prepared a draft strategy statement as part of the Field Office longterm strategy development exercise. The project would like to focus operations in the Northern Region beginning in FY96, particularly the north-west and north-central areas of the Region which are the most neglected as far as deep wells are concerned. Potential donors, aside from the Hilton Foundation, would include British ODA, the Japanese government, CIDA and the World Bank (see discussion below under "Longterm Funding Strategy").

Integration with Field Office Structure:

Recommendation Number 9 of the 1989 evaluation reads,

> "The Rural Water Project should be fully integrated with the Field Office operations, technical services and administrative functions. Action needs to be taken at the regional level regarding pre-drilling planning and animation, site locations, post-drilling pump maintenance, and health and sanitation education."

Impressive strides have been taken in pursuit of this ideal; only one or two steps remain to complete integration.

Firstly, as mentioned previously, the GRWP Manager reports to the AD/Field Ministries instead of directly to the Field Director. It is no longer a "maverick" operation.

Secondly, the Grant Accountant has a dotted line relationship to the AD/Finance, and receives guidance from him. The GRWP books and stocks are audited by the Field Office.

Thirdly, recruitment, hire/fire and remuneration decisions are made jointly with the AD/Human Resources. Eight GRWP staff are seconded from the Field Office, and they receive the same benefits that accrue to other Field Office staff. The remainder of the staff are contract staff, with a different set of benefits as determined by law and custom; remuneration is consistent with any contract staff employed by the Field Office.

Fourthly, a large portion of the Technical Services Team is based at the GRWP campus and assigned either to the Water Resources Unit or the HE/CP unit. It is the HE/CP unit which is responsible for both the pre-drilling animation and the post-drilling activity. Site selection is done jointly with the community and the hydrogeologist of the well-drilling unit. The TSS members not assigned to the GRWP participate in project self-evaluations and start-up workshops.

Finally, the National Office has plans to eventually house all WV Ghana functions on one campus. The required paperwork is nearly ready for submission to VP/Finance at the International Office. (Because property purchase valued in excess of $10,000 is in view, the

proposal must pass through VP/Finance before eventual action by the WVI Board.)

The integrated approach is working well, although an enhancement at the community level would further improve a good situation and pave the way for Area Development Programming. We suggest that the HE/CP unit invite staff from the Operations Department (eg, the Ashanti Region ADP staff) to join them in their rounds. Their role would be to focus on enhancing the impact of HE/CP efforts in health and sanitation by means of appropriate functional literacy. An additional benefit is that there will be no discontinuity when the HE/CP moves on to a new area and the ADP staff remain behind to focus on literacy development (sponsorship-funded), natural resources management (grant-funded) and local institution development (combination).

Recommendation: 93. The HE/CP unit should invite staff from the Operations Department (eg, the Ashanti Region ADP staff) to join them in their rounds, for the sake of continuity in the community after the departure of the GRWP from the area.

MARKETING

The evaluation of marketing issues has been hampered by the fact that there was no team member from WVUS, the main support office involved in the GRWP. WVUS did send a consultant to assist the evaluation, but this still leaves a lack of WVUS perspective which is likely to give a one-sided account of Marketing. The only team member representing a support office was from WVUK, an office which supported the first phase of the GRWP but does not have a monetary commitment to the present program.

In Phase One, there were 5 Support Offices involved in funding the project; in Phase Two, there are only two -- WVUS and WV Taiwan. This simplifies communications and reporting requirements, but a certain amount of technical back-stopping has been lost as a result. Also, most of the burden for raising the Hilton match has fallen on WVUS.

Minimum Match Requirement:

WVUS has, however, exceeded expectations in its marketing efforts on behalf of the minimum match requirement. In FY91 alone, it was able to raise nearly half ($1.5 million) of the $3.2 million mandated by grant terms (although this does not take into account the cost of raising the match, which is over and above). As of end-FY92, the Support Office had raised an additional $800,000 to total $2,298,000, not including interest earned on Hilton Foundation grant funds of an additional $25,000. Based on performance to date, there should be little difficulty in raising the $1 million remaining on the match, since there are still almost 3 years remaining in which to accomplish the goal.

In each fiscal year since the project began, the Support Office has committed the amount

required by the project to meet budget. The amount of match contributed by WVUS in FY91 to the project was $821,000, but for reasons mentioned above only $407,000 was spent. In FY92, that figure increased to $590,000, of which $577,000 was spent. The match commitment in the current fiscal year is $402,000. Thus, the total of match funds spent or committed at the project level is $1.39 million, versus Hilton funds and commitments of $3.0 million for the same period.

Non-Sponsorship Funds as Match:

All of the matching funds raised to date are non-sponsorship funds. The majority of these funds ($1.607 million) were raised via direct mail specifically targetting the Hilton match. The balance came from direct mail featuring WV water programs in Africa ($274,000), from churches via USA Regional Representatives ($154,000), from WV Taiwan ($150,000), from major donors ($76,000) and from miscellaneous and unsolicited donations (37,000).
In future years, WV Taiwan may be prepared to contribute in a larger way, and other Suport Offices may be able to assist as well.

Sponsorship Funds as Match:

The effort to raise sponsorship funds has been more problematic.

In FY92, the Partners In Hope program of WVUS featured the Ghana Water Program, hoping to attract stable church-based donors through a creative video geared towards outreach-minded churches. Accordingly, WVUS committed $125,000 in start-up funds for an Area-wide Development Program (ADP) in Kwahu South District, the area in which Phase II drilling operations commenced. As of end-December, however, only 91 such donors had come forward out of 2000 anticipated. The Partners In Hope program remains hopeful of eventual success, but is obviously in no position to expand. Meanwhile, on the basis of commitments made by WVUS, the Field Office had commenced a literacy project in Kwahu South, and commitments to communities were already too far advanced to allow project termination without serious loss of goodwill in dozens of communities. The project has therefore gone ahead as planned, but not without creating a small crimp in the Support Office's FY93 sponsorship funding plans.

For FY93, WVUS was to have raised a portion of the GRWP match requirement by marketing a second batch of 2000 Picture Folders, this time from Ashanti Region. The funds would have gone towards the software aspects of the Water Program in FY93, then been spun off in FY94 to begin a second ADP. The missing portion of the GRWP matching funds would have been replaced by a third batch of 2000 sponsors, from another district in Ashanti Region -- to be spun off in FY95 into a third ADP.

The Field Office dutifully prepared the 2000 Picture Folders from the target area. Unfortunately, the recession in the USA and a change in WVUS marketing plans to focus on Hispanic donors (the only growth area during the current fiscal year) caused the Support

Office to postpone implementation of the sponsorship concept in the Ashanti Region until FY94. The missing portion of the match has been made up in FY93 by substituting funds from undesignated gifts. While the intent is to get back on track with 4000 sponsors in FY94 instead of the 2000 originally programmed, only time will tell if the sponsorship market will recover sufficiently to bring these plans to fruition.

All the District Administrations interviewed and most of the communities were aware of sponsorship and expressed positive views on it. Communities described their understanding of sponsorship as having friends from another country, and they appear to look forward as eagerly to exchanging letters and photographs as to receiving project benefits. The only negative views expressed were in a few villages where parents said they were afraid of sponsors visiting them because they would feel ashamed that they could not take care of their children as well as sponsors would expect.

Since communities view sponsorship as a positive benefit in its own right, aside from activities funded by it, this means that where expectations have been raised by preparing communities for sponsorship there will be disappointment if this is not followed through, even if funding is obtained through other sources.

Recommendations:

94. The idea of using sponsorship as a match for the Hilton grant should be abandoned, at least for the duration of Phase Two.

95. Where communities have been prepared for sponsorship, this should be followed through wherever possible.

96. No further communities should be prepared for sponsorship until both field office and support office considerations allow reasonable assurance that it will be able to proceed within a reasonable time.

Long Range Funding Strategies:

In Phase One, there were 5 Support Offices involved, with the attendant complexities in grant accounting, reporting and communications coordination. Although dealing mainly with a single support office simplifies relations, it does appear that technical backstopping is now less solid than when WVRD was involved. There is a wider issue of expectations here. Support offices have the opportunity to provide support other than fundraising, including secondment of personnel, NGO networking, exchange of information and international recruitment. However, if support offices' performance is judged principally on income, there is little incentive to use scarce resources on other activities.

Recommendation: 97. **For the duration of the current grant, the GRWP should work more collaboratively and proactively with the primary Support Office (WVUS) to obtain the full level of support required to achieve excellence in all project performance areas.**

98. **Due weight should be given by WVUS to provide additional support beyond fundraising.**

Adequate uninterrupted financial support over a reasonable length of time is critical to sustainability. Conrad N. Hilton Foundation funding for the GRWP will expire in September 1995. It is clear that funding will not be sustained at the present level after the expiration of the Hilton Foundation grant, and that well drilling, latrine construction, and similar activities will not continue unless another major grant is obtained.

The GRWP is already thinking in terms of a Phase Three, since the equipment clearly has plenty of useful life remaining (provided it continues to be maintained to current high standards). The most likely geographical focus would be in the very needy areas of the north-west, which are particularly sensitive to drought and environmental degradation. The GRWP is hoping to attract new donors for projects in these areas. There is a history of the Canadian Public Health Agency involvement in the northwest; thus, CIDA is being pursued as a potential donor. In addition, the British ODA has demonstrated interest in participating financially in such an endeavor. The World Bank has approached WVG about the possibility of expanding their well-drilling program to $10 or $20 million over a 10-year period; however, the experience of WV Uganda with the World Bank leads WVG to adopt an attitude of caution in dealing with the World Bank. There would have to be some safe-guards built in to the funding agreement to avoid the bureaucracy and the controlling tendencies which accompany World Bank funding.

We would affirm the efforts of WVG and the GRWP to complete the draft strategy for Phase Three within the current Fiscal Year, for circulation to interested Support Offices. We recommend that the issue of continued funding in a new zone be actively pursued as a matter of priority, with the goal of securing 85-90% of the necessary funding commitments by the second quarter of FY95. For the sake of the entire GRWP team, WVG would wish to avoid the uncertainty which occurred at the end of Phase One, when continued funding was in doubt until the last two months of the last year.

Recommendation: 7. **Since the drilling equipment would seem to be adequate for a further 5 years of operation after the completion of the present phase, World Vision should give consideration to the future of the program after the present funding runs out.**

99. The issue of continued funding (for Phase Three) should be actively pursued beginning in FY93, with the goal of obtaining the majority of funding commitments by early FY95.

World Vision Ghana recognizes the need to continue health education and functional literacy activities well beyond the close of the GRWP, if a sustainable impact is to be realized from the GRWP. These activities require stable funding of $120 - 160,000 annually per district over seven to ten years. Sponsorship has been envisioned as the primary source of base funding for the continuation of health education and literacy activities. Agricultural and natural resource management programming would rely upon additional grants or sources of special funding.

The GRWP zone of intervention is comprised of eight districts. The most optimistic of sponsorship CIP projections will permit the continuation of project activities in a maximum of four of these districts in the near future. In fact, sponsorship has been initiated in Kwahu South and photos have already been taken in Sekyere West and Ejura Sekyedumasi. As traditional sponsorship projects in other regions of the country are gradually phased out, additional GRWP Districts will be integrated into sponsorship programming.

To date, as mentioned, the effort to raise sponsorship funds has been problematic. Unless there is an abrupt turnaround in sponsorship trends or a new found source of funding, programming levels, as planned, must be reduced considerably. Even if CIP levels of 1500-2000 sponsored children per district are attained, there still remains a question as to the level of program activity these funds will support. The logistics of servicing sponsors will invariably consume considerable resources, and it has not been clearly demonstrated that a CIP level of 1500-2000 children per district will generate adequate surplus revenues to sustain programming objectives.

The Hilton grant enables WV involvement in selected communities within the target area for a period of up to 18 months for any given community. This includes community preparation for well-drilling and community organization, as well as post-drilling follow-up by the drill crew in the form of pump installation and pump maintenance training; by the LLC in the form of latrine and laundry park construction; and by the HE/CP in the form of health, hygiene and sanitation education.

In concept, it is crucial to find longterm sponsors to form a solid foundation for post-drilling development activities in the target communities. It is the only likely source of funds for the literacy, health education and local institution development efforts of the integrated program. The program requires stable funding of about $250-300,000 per year for 7-10 years, for each of the regions where the project has operated. Grants and other special-funding efforts may supply additional funds for agricultural extension work, natural resources management and the like, but they piggy-back on the foundation provided by sponsorship-funded area-wide development.

In Kwahu South, where sponsorship-funded literacy and health work has followed behind the well-drilling program and is projected to continue for 10 years or more, the SWT noted significant additional benefits to the community development process already accruing as a result of an extended WV presence in the area. In fact, it is the opinion of the Evaluation Team as a whole that the 7-10 year extension of involvement in these communities is absolutely essential to maintain community development momentum and to maximize development gains made during the period of grant-funded activities. Without this follow-on, the sustainability of the development process in Kwahu South would be in doubt.

Sponsorship appears to be the ideal funding mechanism for an extended presence in the Ashanti area as well (where the GRWP is now working), particularly if the Area Development Program (ADP) approach now employed in Kwahu South is adopted. It would also appear that literacy and health/hygiene/sanitation education and primary healthcare are the ideal low-input/high-impact interventions ideally suited for the lower-level but longer-term funding provided by sponsorship.

The marketing experience of the Partners In Hope program for Kwahu South mentioned above is particularly deflating, given the promise that sponsorship holds for funding an extended development presence in communities first assisted by the GRWP. It is hoped that the marketing difficulties experienced by WVUS in obtaining sponsors for Kwahu South are related to the economic recession and not to the appeal of the program. Only time will tell. Meanwhile, the Support Office ought no to conclude from this experience that sponsorship is not a viable funding mechanism for the post-GRWP follow-on, even though we as an Evaluation Team are not recommending sponsorship as a funding mechanism for the match.

Recommendation: 100. The GRWP and WV Ghana should energetically pursue with WVUS (and/or other Support Offices) the matter of securing on-going funding commitments to sustain a continued presence of 7-10 years in the ADP mode in those communities previously touched by the GRWP, using sponsorship as the primary mechanism, and literacy and health education as the primary interventions.

RELATIONSHIPS:

Government Relations:

There are a number of different sections of the GOG with which the GRWP must relate. Permission to operate and cooperation is needed from, at the national government level, the GWSC and the Ministry of Health, and at the field level, from local government.

The local government for each district is headed by an elected District Secretary, with an

elected District Assembly which votes for the allocation of funding. Each village is represented by an assemblyman/woman. The non-elected District Administrator reports to the District Secretary and heads a team of administrative officials. The Development Planning and Budgeting Unit is responsible for coordinating the activities of NGOs, monitoring progress and reporting to the District Administrator. The District Health Management Team has responsibility for coordinating health services in the district.

Parallel to the government system there is the traditional leadership. Each village has a traditional chief with a council of elders. The chiefs from a region (not necessarily corresponding exactly with an administrative district) are under the authority of the Paramount Chief of that region. Chiefs command considerable authority at village level, as well as having some influence with local government, and it important to obtain their support.

The evaluation team interviewed representatives of local government and traditional leadership, and reviewed WV documentation relating to government relations.

Preparatory Meetings:

Before the start of project field activities at the end of October 1990, meetings were held between senior WV staff and local government for the project area. The purpose of these was to introduce the project and establish a basis for developing links. The Regional and District authorities gave commitments to cooperate with the project.

Start-up Workshops:

A one week project start-up workshop was held in January 1991. GOG staff participated, with delegates representing the Ministry of Health, GWSC, and Regional Economic Planning Officers. The workshop was opened by the Eastern Region PNDC Secretary.

Regional start-up workshops were held, involving representatives from the local government and traditional leadership, before commencing operations in each new region. The exception to this was Kwahu South, the first region, where time pressure did not allow for a workshop before starting field operations. However, the local government of Kwahu South was consulted in planning, and villages were chosen from a list proposed by the government.

One day regional information workshops are held at intervals to update government and other stakeholders on project progress and to give an opportunity for comment, advice and mutual exchange of ideas. These information workshops were planned in response to the issue raised at the start-up workshop of the need for continuing information sharing to maintain the momentum for collaboration. These workshops took in a very wide range of government departments, local and national, and other organisations; The Eastern Region Information Workshop in February 1992 had over 60 participants including over 40 government personnel. Attachment 13 summarizes workshop activities to date (see also Attachment 9):

Relations with GWSC:

Representatives from GWSC attended project workshops, but this key government body is still not very active in collaborating with the project. Representatives have been invited to visit project sites and to attend task force meetings for the Ashanti-Akim North District emergency drilling, but did not attend. GWSC has complained of not being kept informed of WV's plans and progress, despite participating in information workshops. Written reports have been requested and will be supplied.

A protocol for the relationship between GWSC and WV has been drafted but not yet finalised and signed.

Relations with Kwahu South District Authorities:

The team interviewed the **District Secretary** and officers responsible for the District Budgeting and Planning Unit (DBPU), the District Community Development Department, and the District Non-Formal Education Department.

The District Secretary has visited project communities from time to time. He also receives information through the assemblymen/women representing project communities.

Communications: The District Secretary has been in his present post for 10 years. He first encountered WV in 1985 when WV staff called on him to explain WV's aims for the District. He participated in the February 1992 information workshop, which he felt to be very helpful, and receives regular updates from Eugene Asante. He praised WV's efforts at communication and consultation, contrasting WV favourably with other NGOs operating in the region.

Collaborative Activities: The District Administration has planned WV's activities into the District Programme of Action, a copy of which has been supplied to WV. The District Administration is responsible for development in the region but recognises the limitations in its capacity, particularly in logistical resources, with only one vehicle. To strengthen the DA's capacity, WV has supplied two motorcycles, with a third to be supplied shortly. Two of these are allocated to the DBPU. After the phase out of WV activities, the District Administration will be responsible for the provision of spares for pump maintenance. The District Secretary plans to buy in spares to a central depot in Mpraeso, from which they can be distributed to service centres closer to project areas. Plans have been made to include the necessary expenditures in the 1993 and 1994 budgets.

Attitudes: The District Secretary originally had some negative impressions of WV through hearsay; however, he now expressed strong support for the programme, and particularly commended the efforts to involve the District Administration in planning and execution and to keep them fully informed. The start-up and information workshops were a new feature

for government/NGO relations and proved to be a very effective way of improving communications and mobilising collaboration. The only problem mentioned with WV's programme is that it is only able to cover one side of the district, and the other side is now asking to be included.

Expectations: The District Secretary is fully aware of the nature and timescale of WV's programme, and expressed confidence in the sustainability of the benefits through community self-help. However, he urged that the programme should be continued further to assist the rest of the District.

The **District Planning and Budgeting Unit** carries out twice yearly project evaluations. Officers from the unit visit project sites and physically inspect pumps, latrines and laundries as well as interviewing beneficiaries. The last of these covered 16 villages. The report, which was copied to WV, found progress to be satisfactory and health benefits substantial.

The **District Health Management Team** comprises the District Health Inspector, the District Epidemiologist, and the District Public Health Senior Nursing Officer. Health services in the District are provided jointly by the MoH and the Holy Family Hospital. The District is divided into zones to be served by each. The evaluation team interviewed the Senior Nursing Officer, the Principal Nurse, the Health and Sanitation Inspection Officer, the Nutrition Technical Officer, and the acting District Health Officer, who was also the doctor in charge of the District Hospital.

Communications: The DHMT's first contact with WV was when asked by the District Secretary to provide information on areas infested with guinea worm to use in planning communities for GRWP intervention. WV later held workshops on latrines and laundries, which the DHMT felt were informative. Eugene Asante is a member of the DHMT and attends monthly meetings when possible. B. Boateng attends DHMT health seminars, providing feedback to WV. The DHMT plans and budgets jointly with WV for health activities in GRWP communities, and WV impact is discussed at DHMT meetings, formal and informal. In general, the DHMT felt WV keeps them well informed on health activities.

Collaborative activities: WV is assisting the DHMT's programme for training TBAs by providing funding for two staff working in GRWP communities. The identification and follow up of children for the sponsorship programme is being used as a means of providing data for health monitoring by the DHMT.

Attitudes: The DHMT reported that WV is quick to respond to requests for help (for example, in assisting with the DHMT's programme for training TBAs). They had observed better health in villages WV supplied with safe water. They felt WV's input had enhanced their programme, and that if it was withdrawn, they would not be able to provide as good a service.

Problems with WV reported to us related to areas of need which WV had not been able to

respond to due to lack of resources:

* Drugs and building needs for the District Hospital.

* TBA training for communities not in the GRWP. This was felt to be further depriving communities already deprived of help with water.

* Sanitation for urban Nkawkaw as well as rural villages; the DHMT observes sanitation to be an even bigger problem in urban than rural communities.

* Funding for a Mother and Child Health clinic.

Expectations: The DHMT originally hoped for help with transport. (WV's vehicle fleet is a highly visible and envied asset in areas where one of the main limiting factors in running community programmes is lack of transport). They also hoped for funding for buildings. They now hope for WV's continuing and expanded support for the TBA programme and for maintaining pumps. They suggest WV should maintain a presence in the area for at least a further five years. After WV support is reduced or withdrawn, they expect health and sanitation committees in communities to be able to carry on, but the DHMT does not have resources to monitor and support the trained TBAs, nor to offer refresher courses.

The team interviewed the **Paramount Chief** for Kwahu area. The Paramount Chief lives at Mpraeso but has his traditional seat and palace at Abene; it was here that he made land available to WV for the camp when drilling was taking place in this region. He demonstrated a detailed knowledge of the programme, acquired both by direct contact with WV and through his own information sources of sub-chiefs and elders. He expressed support for the programme, which he felt was benefitting the people.

At Atta Ne Atta, the Paramount Chief helped WV by resolving a conflict between indigenous and Beninois communities. He felt that his contribution to planning was important and expressed disappointment at not having been consulted in the selection of sites; however, he did not blame WV for this as he understood the pressure to start up quickly in the first region of the programme. The Chief has some influence in the District Assembly, partly through several of his sub-chiefs who are assemblymen, and is a potential help for WV in exerting pressure on behalf of the programme.

Relations with Sekyere West District Authorities:

The team interviewed J.K. Wi-Afedzi (District Adminstration Officer for Sekyere West) at Mampong. The District Secretary was away in Accra and could not be interviewed.

The **District Administration Officer** has visited the Oku Junction project site in early January 1993. He also receives information through the assemblymen/women representing project communities.

Communications: The project start-up workshop was felt to be helpful. The methodology was appreciated, as the District Administration Officer felt that participants had been helped to formulate their own ideas and reach a consensus. The District Administration Officer reported that WV keeps him well informed on plans and progress. He has visited the Oku Junction site once, but relies mostly on reports from assemblymen for feedback.

Collaborative activities: It was agreed that WV should drill about 60 wells; this has been included in the District Administration's budget for this year. The District Administration identified local leaders to work with the programme and charged them with the responsibility for pump maintenance. Village assemblymen are responsible for overseeing the progress of the project in their communities. A key activity to which the District Administration made a commitment at the start-up workshop was improvement of access roads; the government is now constructing culverts which will improve access in the rainy season, but the general state of the roads is far from satisfactory and is hindering operations. The District Administration had not yet considered the provision of pump spares after WV has phased out; this was put down on the agenda of a forthcoming meeting for discussion (the local branch of GWSC is available for advice). The District Administration Officer was not yet aware of the purpose of the buildings being constructed on the camp site; he was very interested in the possibility of establishing a government-run service centre here, particularly as the District Administration already planned to develop Oku Junction into a market centre and to place a trained revenue collector there. He asked for further information on WV's plans for the site.

Attitudes: The District Administration Officer expressed satisfaction with the water provision programme so far.

Expectations: When WV first made contact, the District Administration Officer expected that the programme would provide water and then withdraw leaving no preparations for sustainability, as other organisations have done in the past. Through feedback from assemblymen, WV's longer term involvement has now been recognised and is felt to be satisfactory. Sponsorship, which the District Administration Officer expressed as the second phase of the programme, has been explained in detail at a meeting in Accra and is eagerly awaited.

Relations with Sekyere West District Authorities:

Communications: WV first contacted the District Administration to invite participation at the project start-up workshop held August 4 - 9 1991. All key District Administration staff took part in the workshop, which the District Administration Officer felt to be very fruitful. By the end of the workshop, a joint action plan had been formulated and the District Administration Officer was confident that all parties understood their roles. The only suggestion for improving workshops was that the time should be extended, as three days was felt to be rushed for a workshop which was breaking new ground for participants.

The **District Administration Officer** reported that WV keeps him well informed on plans

and progress; WV staff brief the District Administration before initiating new activities in the district. He has visited two project sites, but relies mostly on reports from assemblymen for feedback. He reported no major problems in the District Administration's relationship with WV, except that there was not enough time to meet WV staff as often as he would like.

Collaborative activities: A key activity to which the District Administration made a commitment at the start-up workshop was improvement of access roads. The government is now constructing culverts which will improve access in the rainy season, but the general state of the roads is far from satisfactory and is hindering operations. The District Administration had not yet considered the provision of pump spares after WV has phased out; there is no local branch of GWSC in Ejura, but the Mampong branch is available for advice.

Attitudes: The District Administration Officer expressed satisfaction with progress so far in realising objectives. He appealed to WV for an extension of well drilling to various communities in urgent need of water (a list was supplied), and also for help on road construction.

Expectations: Expectations were discussed at the workshop, and the District Administration Officer felt that WV was following the agreed plans. Sponsorship, which this District Administration Officer also expressed as the second phase of the programme, is eagerly awaited.

Findings:

At the 1989 evaluation of the 1985-1990 GRWP, government relations were assessed as sound, but appeared mostly to be with national government in Accra. GWSC was the key government department for liaison. There is now much more effective integration of WV and government programmes at community level, and district government personnel are visibly better informed and more positive towards the project. Two main factors can be identified which have contributed to this progress:

WV Ghana has treated government relations as an essential element of the project and has a planned programme for development of collaboration. The distinctive feature of this is the series of workshops, in which government personnel from many different departments and levels of responsibility have actively participated. Although quite costly in staff time and effort, these have placed the GRWP on a firmer footing with government and have been the catalyst for a degree of active collaboration unprecedented in the regions concerned. WV Ghana has gone from being regarded with some reserve to being quoted as most effective and conscientious communicator among NGOs.

Concentrating the programme in a limited geographical area has made it easier to develop good working relationships with local government.

Almost all groups and individuals interviewed expressed hopes for future activities by WV,

often large scale, ranging from providing vehicles to expanding the whole water programme. At least some of these expectations will be disappointed. Highly visible assets such as a vehicle fleet, which are much coveted by other groups, have helped to foster an image of WV as a large, wealthy organisation with limitless resources.

Recommendation: 101. WV Ghana should work to achieve a realistic level of expectations for the scope of work which can be covered by WV, and to alter the prevailing image of WV as a "rich" organization.

In general, all interviewees appeared very positive towards the programme and fairly well-informed, although the district Administration Officers in Sekyere West and Ejura-Sekyedumasi appeared slightly less knowledgeable than the District Secretary in Kwahu South.

The District Administrations of Sekyere West and Ejura-Sekyedumasi did not appear as successful in fulfilling their commitments to the programme as did that of Kwahu South. The most significant difference is in road improvements; whereas the District Secretary in Kwahu South actively lobbied to have the grader in his district when it was needed to assist access for the project, those in Sekyere West and Ejura-Sekyedumasi did not succeed in providing as good a road service as had been hoped.

In Kwahu South the work done by Eugene Asante in regular liaison with the District Administration was very evident. The same depth of follow-up is needed in other districts to ensure good coordination with government and to pursue unmet commitments.

The comment was made that participants in the start-up workshop felt rushed. This may be a factor where commitments (notably to improve access roads) were not met; participants may have made commitments hurriedly to meet the requirement of a finished plan of action by the end of the workshop, without fully realising the implications.

Recommendation: 102. Workshop participants should be made fully aware before a start-up workshop that they will be asked to make commitments for action, and time should be allowed for them to carry out any investigations they need to make realistic commitments.

The relationship with GWSC is still experiencing some difficulties. Complaints of lack of information may be symptomatic of unease about WV's programme, possibly because it represents a rival to GWSC's own operations.

Recommendation: 103. The protocol with GWSC must be finalised and

signed.

104. Efforts to build a more effective working relationship with the GWSC should continue, and remaining difficulties should be investigated further.

International Aid Missions Relations:

At present, the Rural Water Project is not receiving any government grants, and so has no contractual obligations to keep overseas aid missions informed on progress. However, good relations with local missions are important to the success of future grant applications, and WV Ghana has made efforts to maintain links through visits and through distribution of annual reports. The US Ambassador accompanied Conrad N. Hilton III and WV staff on a visit to the project site at Asikam, Kwahu South, in January 1991.

WV Ghana has established a reputation as an effective operation for water-related activities. In 1991, for example, when a number of organisations contributed to relief for Liberian refugees in a camp at Gomoa Buduburan, WV was asked to handle water provision. The European Community provided a grant. WV also stepped in to provide a second storage tank after another NGO, funded by a grant from the British Government, failed to complete the work. WV has more recently been asked by the World Bank to participate in a large World Bank funded water provision project.

Some problems arose in the relationship with the British High Commission during the Gomoa Buduburan project due to a misunderstanding over responsibilities. This may have contributed to the British ODA's refusal of a further grant for the Rural Water Project. A member of the evaluation team made a relationship-building visit to the High Commission with the WV Ghana Field Director and had an interview with the Second Secretary for Aid. He was not familiar with WV Ghana, being new to the post, but knew of WVUK though his previous position at the ODA Disasters and Refugees Unit in London. He expressed positive views of the organisation, and indicated that he would support future grant requests.

International NGO Relations:

There are approximately 27 international NGO's working in Ghana, of which CRS, World Vision and ADRA are the most visible. These three are followed by Technoserve and British Water Aid, with groups like Save the Children, Action Aid, World Wildlife Fund, Canadian Cooperative Association, Friends of the Earth, Green Earth and Plan International (new arrival) filling out the ranks.

World Vision maintains strong links to ADRA and Technoserve, and plans to strengthen ties with CRS, Plan International, Save the Children and Action Aid. On February 9 of this

year, these 6 groups will join together with WV to form an Association of International NGO's in Development. Dr. Riverson has been asked to chair the initial meeting.

WV Ghana is already a member of GAPVOD (Ghana Association of Private Voluntary Organizations in Development), the membership of which comprises some 70 agencies of all sizes and descriptions. World Vision, not incidentally, is represented on the steering committee. While GAPVOD has historically emphasized the needs of indigenous NGO's, almost to the exclusion of its international NGO members, a recent restructuring will redress the imbalance and extend more benefits to external NGO's. A sub-group of GAPVOD is comprised of international Christian NGO's, in which World Vision also participates.

World Vision's relations with the international NGO's are on the whole cordial; while there have been occasional difficulties in the past, these have since been resolved -- with one possible exception.

There are hints that the relationship with British WaterAid appears to be a bit strained, even after efforts by WV Ghana to build better ties. For example, the WaterAid country representative reported that, at the last national conference on rural water organized by WaterAid, World Vision failed to appear; since World Vision is one of the most visible agencies working in the water sector, WaterAid was clearly disappointed.

Secondly, the effectiveness of World Vision's coordination with WaterAid in areas where both are working has been variable. WaterAid feels that the coordination between World Vision and WaterAid has been good in Kwahu North, due to clear delineation of activities and responsibilities. But in Kwahu South, there have been some difficulties. A particular example cited by WaterAid was the village of Banka; here, WaterAid's local partner ORAP had mobilized the community and initiated a hand-dug lined well, which was already 56 feet deep when WV offered a borehole well in the same community at significantly lower cost. The community abandoned the first well, although theoretically they could have accepted World Vision's offer without giving up on the WaterAid project. It appears that this is not an isolated example, unfortunately. WaterAid staff feel that in some cases, World Vision has not consulted sufficiently with them before moving into areas where they are already working.

Two aspects of WaterAid's perceptions of World Vision warrant closer examination:

1. The GRWP is seen as inflexible after initial consultations have occurred through Startup Workshops and plans have been laid. While this rigid adherence to schedule may simply be a feature of relatively large-scale, capital-intensive operations, if it is seen by another NGO as having an adverse effect on their operations, then ways of avoiding further clashes of interest need to be sought.

2. In at least some communities, boreholes are clearly preferred over hand-dug wells even where a considerable investment of labor and finances has already been made.

WaterAid is of the opinion that this is because World Vision's wells are virtually "free" to the community. Although World Vision requires contributions from the community in terms of labor, materiel and finances, apparently the cost differential when compared to a hand-dug well is so large that the logical choice is to simply abandon the hand-dug well in favor of a World Vision borehole fitted with a pump.

If this is the case, it may be appropriate to reassess the amount World Vision asks to contribute. On the other hand, it may be that the communities would choose a borehole over a partly-finished hand-dug well even if the cost were greater than the cost of a hand-dug well, simply because of the perceived superiority of a borehole in terms of water purity, water availability in times of drought, and the "high-tech" image.

Recommendation: 105. World Vision should seriously consider WaterAid's proposal to meet at quarterly intervals to exchange information and coordinate planning, as long as the two agencies have operations in the same areas; the same offer should be extended to any other agency whose operations overlap with World Vision's.

Local Indigenous NGO's:

World Vision's ties to Local Indigenous NGOs (LINGOs) have typically been even stronger than the relations with international NGOs. This is due to the close and mutually beneficial cooperation required at the "grass roots" level in ordinary community development activities.

The evaluation team was able to validate the health of the project's grass-roots relations with other NGO's by direct observation and interviews with NGO staff on-site. From an early stage, NGOs with an interest in areas related to the GRWP have been invited to project workshops. Some have collaborated with WV in the field. NGOs with which WV has been in contact include:

Holy Family Hospital
UNICEF
Presbyterian Church of Ghana Water Project
Catholic Relief Services
Save the Children Fund
Water Aid
The Luke Society
SMA Afram Plains Project
Assemblies of God Church
31st December Women's Movement

ADRA
Red Cross

The Holy Family Hospital, Nkawkaw:

The Holy Family Hospital is a Catholic NGO operating in Kwahu South. It works in cooperation with the DHMT, as described in the section on Government Relations. The evaluation team interviewed the hospital matron, the hospital secretary and two health care staff.

Communications: WV has an informal relationship with the hospital, exchanging information as needed. E. Asante has had several meetings with hospital staff on TBA training.

Collaborative Activities: The hospital contacted WV to ask for advice on technical problems in attempting to dig latrines in Oboyan 2, and WV sought advice from the hospital on TBA training. A WV Public Health Nurse works with teams from the Holy Family Hospital and the MoH for TBA training and other health activities.

Attitudes: The hospital staff reported that WV keeps them fairly well informed on programmes and described the relationship as useful. They suggested that WV should include nutritional advice and a malnutrition clinic in the programme.

Expectations: The hospital would like further collaboration in sanitation. One interviewee reported that her early expectation was that WV would inprove rural roads - a major problem for community health outreach teams.

Society for Mission Africa (SMA) Afram Plains Project:

The SMA is a Catholic agency involved in community education and mobilisation in the Sekyere West District for the last four years. The team met Father Globus, the mission head for the district, and Sister Ama, the WID officer, at their base in Oku Junction. The SMA plans to build a hospital and schools at Oku Junction.

Communications: Fr. Globus has worked in Ghana since 1964, and has a particular interest in environmental problems. He has shared his extensive knowledge freely and has been a very valuable source of information for WV.

Collaborative Activities: Collaboration has mostly been in information exchange (mainly from SMW to WV).

Attitudes: Fr. Globus expressed admiration for the active compassion of the WV GRWP team. He suggested that more work could be done in liaison with other NGOs to avoid duplication, and pointed out that the work of the GRWP is short-term and WV must be sensitive to organisations with long-term involvement. He felt that the workshops were

useful, but that more care was needed to ensure that commitments were made with participants' full knowledge of what would be asked of them.

Expectations: SMA has a good knowledge of WV's current operations. Fr Globus sounded a warning that there is likely to be an adverse impact on the environment because of population growth around boreholes.

The Luke Society:

The Luke Society is a health care NGO operating in areas close to those in which the GRWP is operating.

Communications: The Society developed contacts with WV through personal links with Rev. S. Tigah and Dr K. Nimo of WV. They are well aware of WV's programme and have approached Dr Nimo for advice.

Collaborative Activities: Since area in which the Society works does not overlap with that of WV, collaboration is limited to exchange of information.

Attitudes: The Society spoke highly of WV's work.

Expectations: None mentioned.

We commend WV's good relations with international NGO's and local indigenous NGO's, and recommend appropriate efforts to strengthen relations with national indigenous NGO's where this would prove mutually beneficial.

University and Research Institutions:

Cornell University's development think-tank, CIIFAD, was instrumental in the Hilton Foundation's decision-making process when the World Vision proposal was first being considered in 1990. A multi-disciplinary team put together by Dr. Norman Uphoff, a well-known writer within development circles, reviewed the program from the standpoint of longterm sustainability and submitted its recommendations to the Foundation. Thus, it was quite natural for a relationship to develop between World Vision and CIIFAD.

In April of 1992, 3 professors from CIIFAD, led by Dr. Uphoff, visited WV Ghana, hoping to initiate a 3-way relationship between Cornell, University of Ghana, and WV Ghana. By all accounts their visit was successful. Cornell and WV Ghana are now co-sponsoring a Cornell PhD candidate from Ghana, a Mr. Kwesi Poku-Debrah, in field research related to agricultural extension work in the country. Dr. Dave Deshler amd Dr. Josephine Allen, both from Cornell, are participating actively in the GRWP evaluation -- with Dr. Deshler examining project impact and Dr. Allen assessing community participation and gender issues; while in-country, they are seizing the opportunity to build relationships with key individuals

within the Ghana University system. At the end of January 1993, Dr. Merrill Ewert of Cornell led a 3-day training workshop for approximately 40 WV staff from 7 offices in West Africa. The relationship is solidifying because it is perceived as mutually beneficial.

The successful precedent established by collaboration with Cornell has led to a second collaborative relationship, this time between World Vision and the Desert Research Institute from Nevada. DRI recently received a 2-year grant worth $1.4 million from the Hilton Foundation to develop techniques for pinpointing subsurface water using remote sensing technology. They needed an agency to act as a reality-check on the ground in the area of study. The Hilton Foundation steered DRI to World Vision as a possible partner, and DRI chose to focus its attention on three different types of geomorphology -- one in an area where WV is currently drilling (Afram Plains), and another in an area where it hopes to drill within 2 years (northwest quadrant of Northern Region). Two representatives from DRI will be visiting WV Ghana at the end of January to work out the parameters of a partnership. It appears that another mutually beneficial relationship is about to be established.

This kind of collaboration is new to World Vision, but it represents a recent trend among NGO's and knowledge-generating institutions. The NGO's need to keep abreast of recent findings in their chosen field, and the universities need a "laboratory" in which to test new ideas developed in other contexts, or to pursue action research. The national university will also benefit, and will generate the kind of graduates agencies like World Vision are anxious to employ.

Recommendation: 106. WV Ghana should continue pursuing productive relationships with knowledge-generating and research institutions.