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**REPORT OF A CONSULTANCY MISSION TO
EASTERN CAPRIVI, NAMIBIA, TO REVIEW
UNICEF SUPPORT TO WATER SUPPLY
DEVELOPMENT, AND RELATED ISSUES.**

10-13 September, 1990

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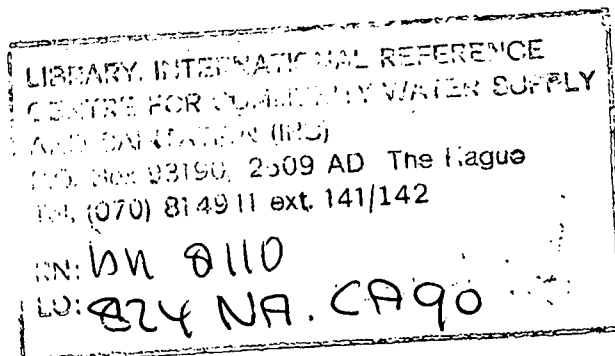
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List of Persons Met

Report on Health Situation in Caprivi, by Dr A. Birkenstock



SUMMARY OF RECOMMENDATIONS

1. UNICEF should continue and expand its assistance to the water supply programme in Eastern Caprivi, with strong emphasis being placed on the protection of water points.
2. A broad approach to clean water supply, environmental sanitation, and health and hygiene education should be developed.
3. UNICEF should consider assisting government with the development of a latrines programme in Eastern Caprivi, promoting the ventilated improved pit (VIP) latrine as the technology of choice.
4. Strong emphasis should be placed in the Eastern Caprivi water supply programme on the development of effective maintenance systems, and the prospects for a community-based preventive maintenance system should be investigated.
5. UNICEF should consider providing a modest allocation of funds to support a brief study tour to Zimbabwe by senior government officials in Eastern Caprivi to review community-based integrated rural water supply and sanitation projects, and related health and rural development programmes.
6. Support should be given to the Eastern Caprivi hospital in the development of its Primary Health Care programme. Support may take the form of the provision of equipment, assistance in the development of promotional and educational materials, provision of technical assistance for the training of community nursing staff.
7. Assistance should also be given to the Dept. of Local Government in the further development of women's self-help groups.
8. The development of an integrated, team approach to health and rural development in Eastern Caprivi should be encouraged, beginning with the formation of an inter-departmental coordinating committee for rural water supply and sanitation.
9. UNICEF should give serious consideration to the development of an Integrated Area Based Project (IABP) in Eastern Caprivi, working through government institutions.
10. To support an IABP, UNICEF should also consider providing a short or long term technical adviser, to be based in Katima Mulilo, with particular responsibility for rural water supply and sanitation issues.

UNICEF Consultancy Mission Report, Eastern Caprivi
10-13 September, 1990

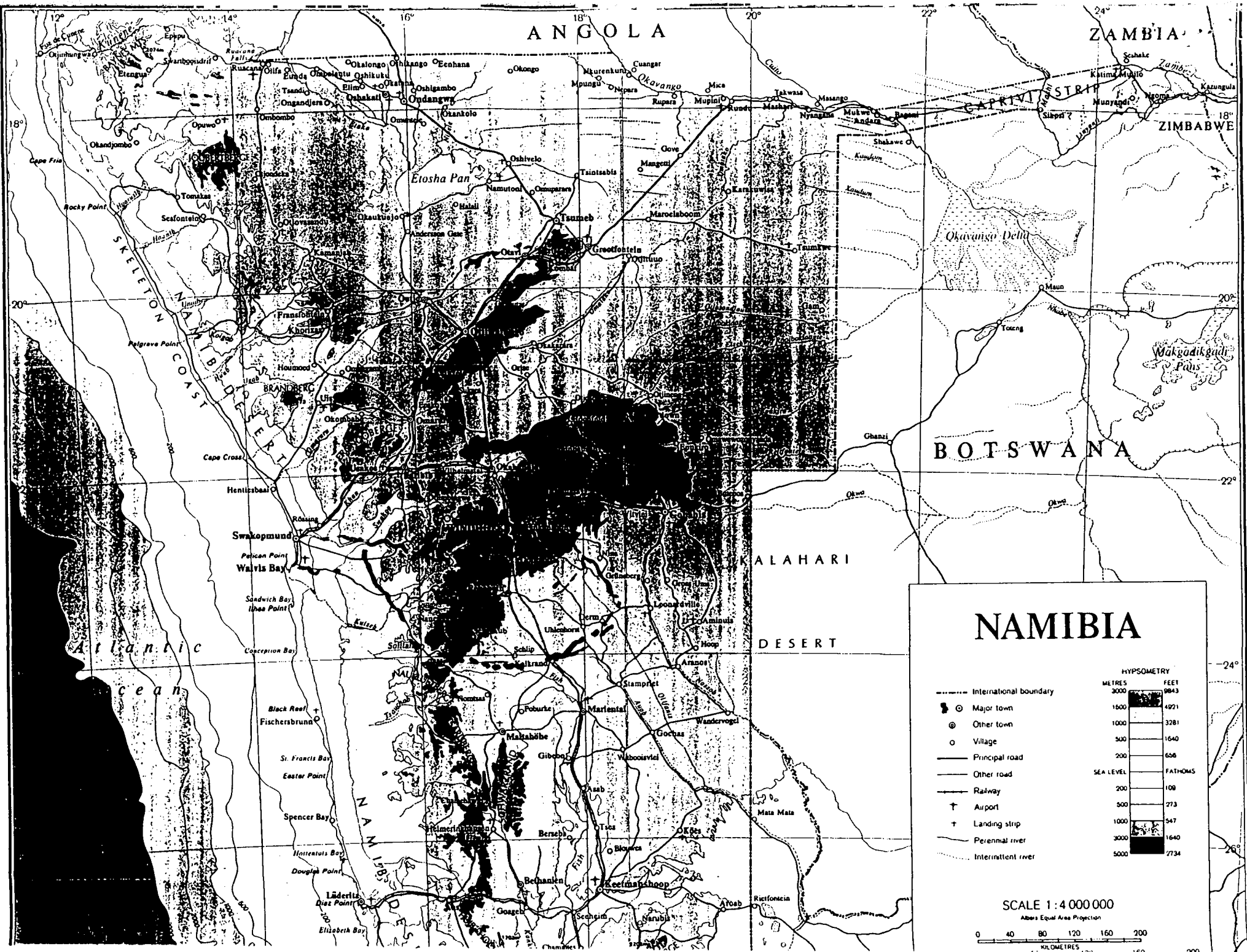
P.Evans, Consultant.

I. INTRODUCTION

1. The objectives of the mission were to review the water supply situation in Eastern Caprivi, with particular reference to water quality, as well as quantity, and associated issues of hygiene and environmental sanitation. General problems of health care and rural development were also reviewed.
2. The mission was conducted between 10-13 September, 1990. A list of persons met is attached. A "Report on Health Situation in the Caprivi", prepared by the medical superintendent at Caprivi Hospital for WHO, and copied to UNICEF, is also attached.
3. The mission was conducted against the background of current UNICEF support to well sinking and deepening operations, as part of an emergency drought relief programme.

II. BACKGROUND

4. Eastern Caprivi is situated at the end of a narrow strip of territory, jutting out of the north-east corner of Namibia, allowing access to the Zambezi river where the borders of Zambia, Zimbabwe, Botswana, and Namibia meet. Access by road is difficult, particularly during the rainy season, with the population of approximately 50-60,000 being in far closer contact with neighbouring states than with the remainder of the country as a consequence of the oddity of its geographical location.
5. Covering a land area of 11,877 sq.kms., Eastern Caprivi is bordered on almost all sides by rivers and swampland. Approximately one-third of the land area in the eastern part constitutes a large floodplain between the Zambezi and Chobe rivers. Access to this area for a period of 4-6 months during the rainy season is only possible by boat, with the population settling on islands of high ground.
6. The area is divided into two districts, Bukalo to the east and Linyati to the west, roughly corresponding to a traditional tribal demarkation.
7. The local economy is based principally on the production of maize, and the rearing of cattle and goats. In spite of



NAMIBIA

----- International boundary

● Major town

○ Other town

○ Village

— Principal road

— Other road

— Railway

† Airport

† Landing strip

— Perennial river

--- Intermittent river

HYPSEMETRY

METRES	FEET
3000	9843
1600	5249
1000	3281
500	1640
200	656
SEA LEVEL	FATHOMS
200	109
500	273
1000	547
3000	1640
5000	7734

SCALE 1 : 4 000 000

Albers Equal Area Projection

0

40

80

120

160

200

KILOMETRES

regular flooding, the area is vulnerable to drought. An emergency drought situation is currently being faced in Eastern Caprivi, with food assistance being given to the population with aid from WFP and RRR. The Zambezi river is said to be at its lowest point for 30 years, and the water table has dropped, leaving many wells and boreholes dry. Surface water sources, apart from the perennial rivers forming the area's borders, have all but dried up, creating a water crisis for both human and livestock consumption.

8. Major health problems in the area have been identified as malaria, AIDS, water and sanitation related ailments, and poor child immunization coverage (see report attached). Malaria is highly endemic, with approximately 20% of the population being treated by the health services each year, and many more probably contracting the disease but not appearing in official statistics. The appearance of AIDS in the area is a cause of major concern for the authorities, with half of the currently reported cases in Namibia as a whole originating from this area. Polluted water sources, away from the main rivers, and generally poor environmental and domestic hygiene standards, are identifiable causes of dysentery, hepatitis, gastroenteritis, and bilharzia. Low coverage levels of child immunization mean that infectious diseases such as measles, whooping cough, and tetanus remain as serious health problems.
9. UNICEF, along with other agencies, has provided emergency assistance to Eastern Caprivi in recent months in an attempt to offset the worst effects of the drought. Assistance has included support to an intensive immunization campaign in July of this year, and the provision of funds for the purchase of materials for the deepening and lining of existing wells, and the construction of new, hand-dug wells. The wells programme is being undertaken by the local population on a food-for-work basis, with provisions being supplied by WFP.

III. RURAL WATER SUPPLY AND SANITATION

III.i water supply

10. Responsibility for water supply in Eastern Caprivi is shared between the Dept. of Water Affairs, which is responsible for a pipeline running from the Zambezi at Katima Mulilo to Kongola, and two shorter pipelines pumping from the Linyandi river serving limited areas around Linyandi and Chinchimane, and the Dept. of Agriculture and Rural Development, which is responsible for boreholes and hand-dug wells. Until recently, the responsibility for boreholes and wells lay with the Dept. of Works, but this was handed over to Dept. of Agriculture and Rural Development following Independence earlier this year. In many parts of the region, groundwater is saline and unpotable.

This is particularly true of the central part of Linyati district which is virtually uninhabited as a consequence.

11. The Katima-Kongola pipeline runs alongside the road between these two settlements for a distance close to 140 kms. The pipe is 100 mm. (4 ins.) diameter, and is estimated to serve about 15,000 people and 15-20,000 cattle, from 60 outlets. During the consultant's field trip, one of the two motors pumping water from the Zambezi was out of commission and water was only available along about the first 40 kms. of the pipeline. Apart from maintenance problems, the service capacity of the pipeline is also being strained by the settlement of returnees along the roadside outside Katima Mulilo, encroaching on an area of forest reserve. The pipeline appears to be the main attraction for these settlers, as soil conditions in this particular area are poor and more suitable for forestry development than agriculture. The tapping off of water by new settlers adds to the service problem. The shorter, 50 mm. (2 ins.) pipes, further to the south, were not visited.
12. Several tapping off points along the pipeline were seen, and all were in poor sanitary condition. The points consisted of simple standpipes, often placed close to a concrete cattle watering trough which could be filled by hose from the tap. Puddles of standing water were common around the standpipes and cattle watering points, showing evidence of significant spillage and creating an obvious health hazard from animal pollution and providing breeding sites for insects.
13. Poor environmental conditions characterized almost all of the water points visited, whether on the pipeline, or at boreholes or wells. No facilities have been provided to manage spillage from the water points, creating unsightly and unhealthy puddles around many of them. Standing water around water points also encourages encroachment by livestock, leading to faecal pollution and general degradation of the immediate environment.
14. There are approximately 300 hand-dug wells in Eastern Caprivi, mostly concentrated in the Bukalo district to the east, and alongside the main waterways where the water table is relatively high. A further 150 boreholes have been installed on the higher ground, principally in the western part of the region. The wells average about 5-7 metres in depth, and may go as deep as 10-12 metres. Boreholes in the eastern part average 30-40 metres in depth, while those in the west vary between 60-120 metres. Most of the boreholes are operated by handpump, though 20 are driven by diesel engine and one, at Iseke in Bukalo District, is driven by a solar pump. During the current drought as many as 80% of the wells have run dry, while a very high proportion of the boreholes (again, perhaps

- as high as 80%) are out of commission, either through running dry or because of breakdown. Even during normal seasons, many of the wells are said to run dry towards the end of the annual drought.
15. An emergency tanker delivery service is currently being run by the Dept. of Agriculture, though this is being hampered by constant breakdowns. During the consultant's visit only two out of the five tankers were on the road. Empty oil drums parked by the roadside were frequently seen, awaiting tanker deliveries. These were seen both in severely drought-stricken areas, and also close to the pipeline and near wells and boreholes which were still producing water. The insistence of people in leaving drums out for water even though their local supply was still operational perhaps indicates a lack of faith in the reliability of their current water sources. A more cynical interpretation would be that individuals were simply taking advantage of a free delivery service, irrespective of the needs of others.
 16. As noted, environmental health conditions around most water points are poor. Hand-dug wells are lined with reinforced concrete rings, but are left open at the top. Lining the wells prevents collapse of the unstable soils in the area, and also drastically reduces siltation, but does nothing to protect the water source from pollution. Several of the wells seen were infested by insects, and one provided a convenient watering hole for a nest of bees. Water is drawn from the wells using old five litre oil cans attached to rope. Protection of water points to ensure the provision of safe water supplies is an immediate and obvious need.
 17. Well lining rings are made from concrete, strengthened with aggregate, 6 mm reinforcing rod, and softwire. The rings are 1.5 metres deep, and a little over a metre in diameter. Each ring costs close to R.400, with 7-10 rings being used per well. Under the current programme, wells are being deepened by the addition of two or three rings. The deepening method is somewhat hazardous, entailing excavating below the surface of the current rings and encouraging them to slip down into the well while more rings are added from the top. This operation is sufficiently risky that the Dept. of Agriculture insists on community volunteers signing indemnity forms before commencing work. Well deepeners are supervised by a contractor, paid on a piece-work basis by the Dept. Food-for-work rations are issued to community labourers on a per ring basis.
 18. During the month of August, eight wells were deepened under this programme. The first food rations were issued during the consultant's visit. Further wells will be deepened in the next two months before the onset of the rains makes further work difficult. The programme has been hampered by logistical

problems, both in the supply of food and the procurement of materials.

19. The use of concrete rings provides an effective means of stabilizing well walls, and renders them safe from collapse. The cost, however, is high, and would be more so if labour costs were not saved by the food-for-work programme. In the longer term, the Dept. of Agriculture may wish to consider to use of bricks as an alternative lining material. Though more labour intensive, the use of bricks may on balance work out to be a cheaper, though equally effective solution.

III.ii water point maintenance

20. As the estimates of water points out of commission indicate, maintenance is a major problem. During the previous administration, the Dept. of Works had an annual allocation of R.60,000 for borehole maintenance. This clearly proved to be inadequate. Two mobile maintenance teams are responsible for repairs, but are unable to keep up with demand and are frequently grounded by vehicle breakdowns and inadequate equipment. Most boreholes are fitted with either Mono or President pumps which frequently break down, due in part to excessive use. Improved handpumps, better vehicles, and a larger budget are required to improve maintenance. The development of a preventive maintenance system would also be desirable, to reduce the incidence of major breakdowns and lower costs. The potential for community involvement in a preventive maintenance system should also be investigated.
21. The maintenance problem in respect of boreholes is exacerbated by their relatively short lifespan once installed. The sandy soils in Caprivi are highly corrosive, and rapidly destroy the steel casings used to line borehole wells. The average lifespan of a borehole is little more than six years (compared with boreholes in Zimbabwe, for example, which have been operational for as long as 50 years). Development costs are also very high, averaging R.20,000 per borehole. In excess of 300 boreholes have been drilled in recent years, with 150 or so currently nominally in service, though most of these are broken down. The relatively high incidence of saline groundwater further pushes up costs due to the abandonment of boreholes when unpotable water is found.
22. A comprehensive groundwater study of the Eastern Caprivi is about to be undertaken by a private consulting company, on behalf of the Dept. of Water Affairs. This will include a complete analysis of groundwater resources, as well as a full logging and plotting of all wells and boreholes. This study, due to commence in October, will provide invaluable data for the further development of groundwater resources in the area.

III.iii environmental sanitation

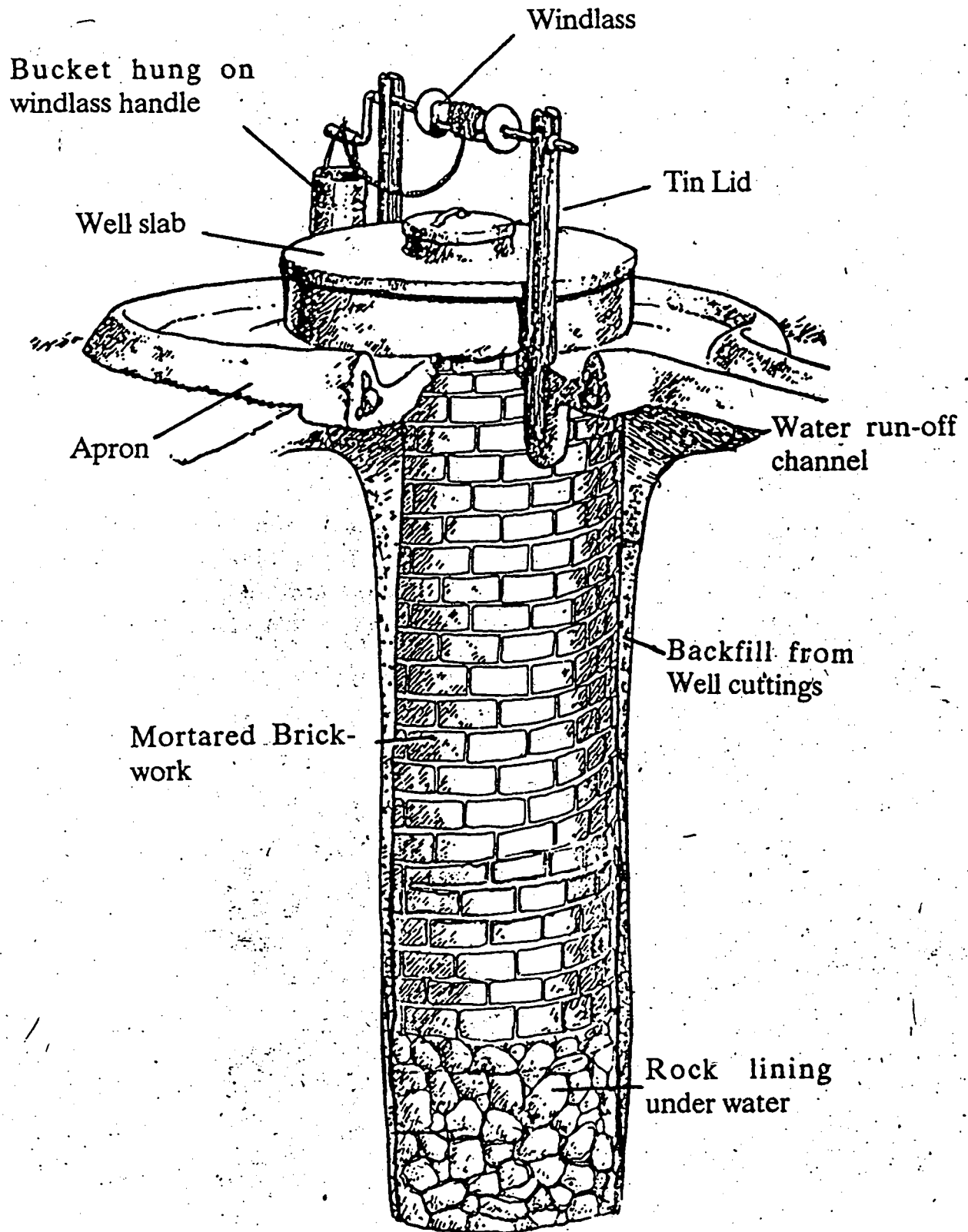
23. Pollution of water sources and environmental pollution around water points have already been highlighted as important problems. Broader problems of hygiene and sanitation add to these, to create a generally poor environment from a health point of view. As noted in the medical superintendent's report, the high incidence of many infectious diseases is evidently strongly linked to polluted water sources and poor sanitation.
24. Household latrines are so scarce in Eastern Caprivi that none were seen during three days of field trips. Some attempts have been made by extension workers to encourage latrine building, but with little success. Technical support is not currently available to help develop a latrine programme, though potential exists for the development of a joint programme between the Depts. of Health and Agriculture. Consideration should be given to the introduction of the ventilated improved pit (VIP) latrine as the preferred technical option for improved sanitation in the area.
25. Water storage practices in the home do little to protect water from further pollution, with water often being carried and stored in open containers. Personal and domestic hygiene are problems which need to be seriously addressed in Eastern Caprivi, ideally as part of a broader community health package.

IV. PROPOSALS FOR FURTHER SUPPORT

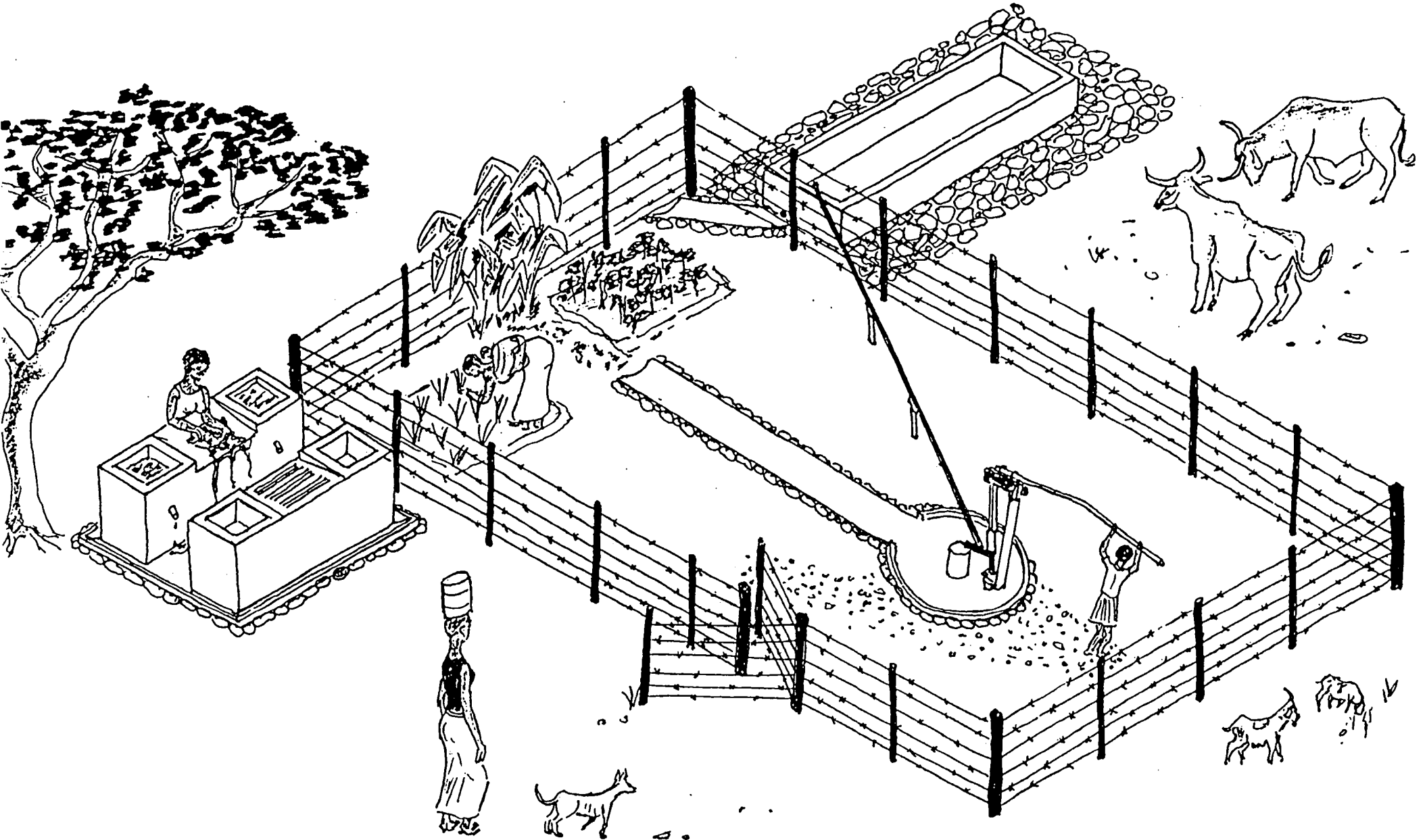
26. Eastern Caprivi is experiencing serious problems in respect of both water quantity and quality. If all water points were operational the problem would be far less severe, but the very high breakdown rate of boreholes and current incapacity to keep pace with maintenance requirements means that coverage only looks adequate on paper and is far from adequate in practice. The situation at present is clearly made much worse than usual by an exceptionally bad drought, but from what was learned during a brief visit it appears that water supply is a perennial cause for concern.
27. Scarcity of water during the dry season, and the poor quality of water throughout the year, clearly point to the need for assistance in making more water sources available, through the construction of more wells and boreholes, and, equally importantly, improving water quality by the protection of existing sources, and ensuring that all new sources are built to a hygienic standard.

28. In the case of wells, the most simple and obvious intervention is to provide these with covers. A simple reinforced concrete cover could easily be made, at little extra cost in comparison with the overall cost of well linings. This could be fitted, at the very least, with a covered access hole through which buckets could be dropped to collect water. A slightly more sophisticated solution could entail fitting a bucket and windlass at the well-head, again using a coverable access hole to draw water. The best, and most hygienic, solution would be to cover wells and fit them with relatively low-cost hand pumps. This solution should entirely eliminate the danger of well pollution from the service, but would imply a more sophisticated maintenance system. A simple design for covering hand-dug wells and installing a bucket and windlass system has been developed in Zimbabwe. Design drawings and instructions were left with the Dept. of Agriculture by the consultant.
29. In addition to providing covers for all existing and future wells, it is also strongly recommended that all water points (wells, boreholes, and standpipes) be improved and protected by the provision of durable aprons and spillway channels which would assist in draining away spilled water. The spillways could drain into soakaway pits, and eliminate the serious puddle problems which were evident at many water points. These additional facilities can be added at relatively little cost - the Zimbabwe design for apron and spillway requires only five bags of cement, a modest investment in comparison to the overall costs of water points in the area.
30. If resources allow, consideration could be given to the provision of more sophisticated civil works around water points. These could include the provision of clothes washing sinks and slabs, and cattle watering troughs. Fencing of water points to keep livestock away is also desirable. Again, a design manual for the construction of a full set of civil works for water points, developed in Zimbabwe, was left by the consultant with the Dept. of Agriculture.
31. All of these recommendations could be taken up in the immediate term, if sufficient resources were made available to the Dept. of Agriculture to undertake this work. The Dept. is under considerable pressure as a result of its new responsibility for rural water supply and it would be necessary to appoint a supervisory-level officer to take full responsibility for this work. An additional one or two 4wd vehicles would also be required, and a certain amount of tools and equipment to assist both new construction work and maintenance.
32. The use of food-for-work schemes should be seen as a short-term, immediate measure. It is probably undesirable to institutionalize this practice, particularly if community

CROSS SECTION OF AN UPGRADED WELL



Upgraded Well design, developed by Blair Research Laboratory, MOH, Zimbabwe.



Model water point layout, District Development Fund, Zimbabwe.

- self-help is seen as a long-term development strategy for the area. The general indications are that such an approach could be successfully instituted, though good promotional work would be required to build up community spirit and self-reliance.
33. The maintenance issue is of paramount importance, both in the short and long terms, and should be given full attention. Greater emphasis is required on preventive maintenance systems, to reduce the incidence of major breakdowns and the subsequent pressure these place on maintenance teams. Consideration should be given to the development of community-based preventive maintenance systems, drawing on the experience in this field of other countries in the region. A systematic inspection system of water points, to identify maintenance problems at an early stage, would be of great value. The possibility of contracting water point maintenance out to the private sector has been mooted in Eastern Caprivi and may be worth investigating as an alternative to a government managed operation.
 34. Improvements to environmental sanitation in general are required if real benefits are to be obtained. There would be little value in devoting resources to improving water sources if this was instantly undermined by poor environmental conditions away from the water points themselves. This would primarily involve the development of a vigorous health and hygiene education campaign, and the development over time of a household latrine building programme. The latter would probably take some time to develop, but good groundwork could be laid in the immediate term by improving water points and making these a focal point for the development of a promotional programme. A latrines programme for schools will also be required, with the associated development of appropriate health education materials.
 35. As noted, the manpower resources of Dept. of Agriculture have already been stretched by the additional responsibilities passed to it for rural water supply and assistance would be required from other departments. The Departments of Health and Local Government both have considerable potential to assist in the development of such a programme, particularly on the promotion and education sides. It is recommended that the regional authorities give consideration to establishing an inter-departmental coordinating committee to develop such a programme, perhaps in the context of a broader, integrated community-based health and rural development programme.
 36. An integrated, inter-departmental approach would have good prospects for success in a relatively compact area such as Eastern Caprivi. Such approaches are not without their problems, however, and it may be of value for departmental managers to take advantage of experience in neighbouring

states before embarking on a programme on their own. An integrated, inter-ministerial approach to rural water supply and sanitation provision has been developed in Zimbabwe, and has enjoyed significant success in recent years. Given the proximity of Eastern Caprivi to the Zimbabwe border, serious consideration should be given to providing a modest allocation of funds to send a small team of senior officers from Eastern Caprivi on a 1-2 week study tour of western Zimbabwe to review progress there and consult with colleagues in Zimbabwe. A good opportunity would also be provided in this way to review rural water supply and sanitation technologies in a country which has been the undoubted leader in this field in the region.

37. Arrangements for such a visit could be made through the National Coordination Unit for Rural Water Supply and Sanitation, Ministry of Local Government, Rural and Urban Development, in Harare, or through the UNICEF office in Harare which is involved in this programme. A visit of even a week's duration could be of great benefit, and of modest cost when it is considered that the Zimbabwe border is closer by road to Katima Mulilo than Rundu, the nearest major town in Namibia. It is recommended that the study tour party should be made up of the chief of the Dept. of Agriculture and the officer designated to take responsibility for rural water supply, and a senior officer from the Dept. of Health and the Dept. of Local Government.

V. GENERAL HEALTH AND RURAL DEVELOPMENT SUPPORT REQUIREMENTS

38. The general strategy recommended in this report implies the development of a broadly-based, integrated approach to development in Eastern Caprivi. Given this view, it may be of assistance to broadly review related health and community development issues in Eastern Caprivi which could equally benefit within this framework.

V.i health services and the primary health care programme

39. The Minister of Health in Namibia has recently endorsed the Primary Health Care strategy as the basic approach to be adopted in the country as a whole, implying a strengthening of community-based preventive health measures to relieve the burden on curative services. This approach has been favoured by the medical superintendent at Caprivi Hospital for some time. A primary health care plan is currently under development.
40. In terms of curative facilities, Eastern Caprivi appears on the face of it to be relatively well-served in comparison with other regions. In addition to the recently expanded hospital at Katima Mulilo, the rural population is also served by a

- network of 23 rural clinics. On a per capita basis, this makes Eastern Caprivi relatively well-served. A closer examination reveals, however, that many of the clinics are poorly equipped and under-staffed, and that a great deal of potential has yet to be realised, largely due to a scarcity of resources.
41. Of the 23 clinics, two currently provide delivery services, with associated ante and post-natal care. Four have refrigerators and are thus able to provide immunization services. Ten of the clinics are equipped with solar-powered short-wave radios, enabling them to keep in regular contact with the hospital. All clinics suffer from a shortage of basic drugs and equipment, and services are hampered by transport shortages.
 42. The basic approach currently favoured by the health administration in Eastern Caprivi is the development of a rural health centre concept, offering both curative and preventive services. Three clinics would require upgrading to full health centre status, each being responsible in turn for seven or so satellite clinics. The clinics at Bukalo and Sibbinda have already been identified as principle health centres, with either Sangwale or Chinchimane being the third.
 43. In order for this scheme to be successfully developed, additional resources are required. These would include the provision of refrigerators for all clinics (ie. an additional 19 refrigerators) to ensure that an effective child immunization programme could be established, the provision of a 4wd vehicle/ambulance for each of the three principal health centres, and the provision of short-wave radios for the 13 clinics currently without them. A regular, improved supply of essential drugs would also be required.
 44. A shift of emphasis from a curative to a preventive approach also entails to development of an appropriate training programme to provide clinic staffs with the necessary skills and motivation to launch and sustain effective outreach programmes. The area currently has two trained community health nurses, but this is insufficient to meet the need, and more nurses require training in community-based skills. A short-term training input from an expert in this field would be of benefit, as well as assistance with the development of appropriate materials and the procurement of suitable textbooks.
 45. A strengthening of environmental health services is also required in Eastern Caprivi. In the past, the health inspectorate was a central government responsibility. It now appears likely that this responsibility will shift to the local health administration. At present, Eastern Caprivi is

served by one Health Inspector and two Health Assistants. A second Health Inspector is expected to be in post in the not too distant future. The Health Inspectorate could clearly play an important role in the improvement of environmental health conditions, and its effectiveness would be much improved if strong operational links were established between this cadre and rural clinic staffs, on the one hand, and other rural extension workers (in the Dept. of Agriculture and Rural Development, and Dept. of Local Government, for example).

V.ii other rural development and extension activities

46. The Dept. of Agriculture has the largest network of community-based extension workers, with 22 agricultural extension workers stationed throughout the area. These are responsible for the development and maintenance of demonstration agricultural projects, and the provision of advice and services to local farmers. With the additional responsibility for water supply having been passed to the department, it is likely that these workers will need to slightly broaden their role to include the promotion of community-based water point management, and the promotion of improved environmental sanitation.
47. The Dept. of Local Government is less well provided for, currently having two Community Activators working in the field with women's self-help groups. These have proved to be a great success, with well-attended meetings being held on a regular basis. Each activator is currently working with five or six groups, with attendances averaging from 17 to 58 members. Topics addressed by the groups include health and hygiene, food preparation and nutrition, domestic budgeting, recycling, vegetable growing, and sewing and knitting. The activators do a large amount of training work themselves, and also draw on expertise from other ministries when specialist topics are being addressed. One activator said she was keen to develop a latrine programme with her groups, and had already approached the Health Inspector for assistance.
48. The groups have a strong sense of identity, and have given names to themselves (ie. *Ikezeze* - "do-it-yourself"; *Ituseng* - "help yourself", etc.). The prospects for the development of income-generation projects through the formation of cooperatives, based on these groups, appears to be strong, and some groups have already begun to raise funds through sewing and knitting. Shortages of staff and basic equipment are currently holding back progress. The Dept. is expecting to be allocated additional staff in the near future, but expressed the need for equipment such as sewing machines, kitchen equipment, education materials, and perhaps even a TV and video to help expand its programme.

49. The apparent goodwill generated within the groups makes these excellent focal points for promoting community self-help programmes, and there is a clear potential for linking up the efforts of the Community Activators with those of clinic staffs, the health inspectorate, and agricultural extension workers.

V.iii an integrated approach to health and rural development

50. On the face of it, Eastern Caprivi appears to be an ideally suited location for the development of an integrated approach to health and rural development. Though confronted with many problems, and isolated from the rest of the country, a basic structure and the necessary commitment appears to be in place for a coordinated development programme, drawing its strength from a team approach. The isolation of the area can be seen as an advantage in this context, with well-defined problems which can be focussed on with few external distractions.
51. UNICEF may wish to consider offering support to an Integrated Area Based Project (IABP), operating directly through government institutions. Such a programme would provide an interesting contrast to the IABP currently underway in Western Ovambo which has similar objectives, but is working less directly at present through formal structures. An IABP could assist in strengthening local capacity for the management of community-based development programmes, and help to optimize the efforts of extension workers through the creation of a team approach. Implementation efforts should benefit from this, as well as promotional and educational campaigns which, through coordination, would assist in presenting clear and consistent messages to the rural population.
52. For a variety of historical and traditional reasons, divisions are apparent in the area between the populations in the two districts in Eastern Caprivi. Traditional authority is of considerable importance in the region, and these issues will need a sensitive and diplomatic approach on the part of public service officials. The impact of a major sugar plantation project currently under negotiation between the government and Lonrho is also a potentially sensitive issue, with considerable uncertainty among the local population at present as to the precise impact this will have. In many respects, this project could be of considerable advantage to the local economy, and may have significant advantages in relation to water availability in the central part of the area, as well as improving access to the region as a whole. On the other hand, the effects of the project on community access to farming land, as well as the as yet unknown environmental impacts, remain as uncertainties which will require careful monitoring.

53. IABP resources could be provided to assist in the strengthening of community-based health services, through support to the PHC plan currently under preparation; the further development of the Dept. of Local Government's community mobilization programme, focussed on women's self-help groups and other initiatives; a significant strengthening of the Dept. of Agriculture's rural water supply efforts along the broad lines outlined earlier in this report, as well as inputs to agricultural development activities aimed at increasing food security. In support of an IABP, UNICEF may also wish to consider providing technical assistance to the water supply programme in particular, to support the Dept. of Agriculture in taking on this new role. A well-motivated and energetic technical adviser, with a firm commitment to a broad-based approach to development issues, could help strengthen the Dept.'s efforts in the first year or two.
54. The establishment of an IABP will require careful planning and preparation, and considerably more input than is possible during a short consultancy mission. The resources required to support such an initiative need not be excessive, however. Fairly modest inputs in the Eastern Caprivi, if properly and carefully directed, could have a relatively rapid impact. Sufficient resources would obviously be required to assist with the provision of vehicles and equipment, essential supplies and materials, but at the same time a considerable amount of effort would be directed to training and software elements which have relatively modest costs.

LIST OF PERSONS MET

Mr I.Barrion*	Actg. Chief of Agriculture, Dept. of Ag.
Mr K.Sibolili	Deputy Regional Director (designate), Dept. of Ag.
Mr van der Burgh	Chief, Dept. of Works
Dr A.Birkestock	Medical Superintendent, Caprivi Hospital
Mr L.Aibalelo	Nurse in charge, Muyako clinic
Ms J.Mulambo	RRR
Ms J.Tibinyane	RRR
Mr M.Mulonda	RRR
Mr Mukasa	Control Officer, Dept. of Local Government
Ms L.Mubonenwa	Community Activator, Dept. of Local Government

** I would like to express my appreciation to Mr Barrion in particular for his efforts as host and guide for the consultancy mission.*

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17 JULY 1990

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Regional Representative
W.H.O.

REPORT ON HEALTH SITUATION IN THE CAPRIVI

1. Herewith our report on the health situation in the Caprivi following on the announcement by the President of the state emergency in this region. Various health problems which have given rise to this situation have been identified and the measures needed to alleviate it suggested.
2. The following problems are major factors in causing ill health in this region and yet are problems which can be remedied by appropriate action.
These are:
 - a) Malaria.
 - b) Aids.
 - c) Lack of sanitation and clean water.
 - d) Poor immunization coverage of the population.

2.1 MALARIA

This disease is endemic to the Caprivi, with a seasonal peak during the rainy season, January to April. Some 10,000 patients are treated every year. This is + 20% of the total population. It is estimated that the real number of people contracting malaria is significantly higher than shown by these statistics. It is without doubt the single largest cause of abortions and premature deliveries amongst pregnant women, and morbidity and mortality amongst the population in general.

The good rainy seasons in recent years have resulted in an upsurge of the disease to alarming proportions. Unfortunately, due to a scarcity of transport and equipment, the combating of the disease by spraying and the provision of medicine cannot be done affectively.

2.2 AIDS

The alarming appearance of this disease in the Caprivi is cause for concern, especially as half of the reported cases in Namibia originate from this area. The free communication and passage of people between Namibia and Zambia across the Zambezi river is undoubtedly an important factor in the transmission of the disease

from areas in the North: Surveys show that between 10 - 15% of pregnant women are H.I.V. +ve, with a marked increase in mortalities over the last year. The implications for the Caprivi are serious.

2.3 Polluted water and poor Sanitation

The Caprivi is blessed with clean flowing water from its rivers. Unfortunately, the central areas do not have water except from boreholes, wells or pools left by the seasonal rains. These become polluted during the dry season and are a source of dysentery, hepatitis, gastroenteritis and bilharzia. Coupled with this fact is the poor hygiene practiced by village people with regard to disposal of faeces and urine where the "bush" toilet is generally in use. Most sufferers are children; they are also the main source of pollution of water sources.

2.4 Infectious diseases

Measles, whooping cough and tetanus remain serious problems in this region. Immunization of children is difficult due to the social structure of the community who live in small scattered groups throughout the country. Children accompany their mothers when these are busy in the fields or collecting firewood and water. Most clinics are within 15 km. of any village, but transport is scarce and expensive. The eastern half of the Caprivi lies in a flood plain which is flooded for 4 - 6 months of the year. The only means of transport is canoe, boat or helicopter. Many parents refuse immunization for fear of witchcraft or strange diseases being given to their children.

3. SUGGESTED ACTION AND REQUIREMENTS:

3.1 MALARIA

The fight against malaria is being carried on constantly by the health teams from the environmental services of the Ministry. Spraying of huts is being done during the winter months, whilst mosquito repellants and nets are provided to the public at cost prices during the malaria season. Approximately 25% of the population contract malaria every year, the treatment costs of which runs into hundreds of thousands of rand. Mortality from malaria, especially cerebral malaria, is high. We, as the regional health team are confident that, given adequate equipment and supplies, we can significantly lower the incidence of malaria in this region. The following items are urgently required.

- a) Two 4 x 4 vehicles - to provide transport for malaria spray control teams, as well as the distribution of mosquito nets and repellants.
- b) Two 60 horse power outboard engines for the underpowered hospital boat. - These are needed to serve the flooded areas of the Caprivi with adequate supplies of medicines and mosquito repellants, which cannot be done adequately at present because the motors are too small.
- c) Mosquito nets, coils, lotion and repellant candles used to prevent mosquito bites. Nets especially are recommended as they can be used over a long period of time. These items have been found to be very effective and cost efficient.
- d) Anti-malaria drugs such as Chloroquin, Quinine, Fansidar and Paludrine. The last named is needed as 2% of our malaria is caused by *P. vivax* or *P. malariae*, which are not sensitive to Chloroquin.

3.2 AIDS

A program for A.I.D.S. identification, coupled with health education is planned for the near future.

However, Aids is very difficult to control without a quick and reliable method of laboratory testing. H.I.V. tests take six weeks before results are obtained. By then, most patients have disappeared into their communities and cannot be treated, meanwhile spreading the infection wholesale. A local laboratory H.I.V. testing machine is urgently required.

3.3 Poor sanitation and polluted water:

A community program to educate people on the health hazards of poor sanitation and polluted water is needed as a matter of urgency. Staff are available to do the work, but they require training and the equipment required for health education in the rural areas.

Requirements include:

- a) Hand operated water pumps - to be mounted over closed wells.
- b) Transport in the form of vehicles x 2
- c) Charts and other visual aids.
- d) A V.I.P. pit latrine team to provide toilet bases and seat moulds which can be provided to communities free of charge.

3.4 Infectious diseases

An E.P.I. program is essential for basic P.H.C. in the Caprivi. A team is required to do immunization on a full time basis so as to reach communities isolated on islands in the flood plains and those not within reach of the clinics. Staff are available to do the work, but there is a serious shortage of equipment such as fridges, vaccine and transport to make such a program functionable. Communication with many of these outlying clinics is poor. What is needed is:

- a) Transport - 4 x 4 vehicles and a small boat.
- b) Fridges - small gas fridges for 8 clinics.
- c) Shortwave radios for 14 clinics.
- d) 100 copies of P.H.C. guide book such as "Where there is no doctor". by David Werner.