

FD-AAX-074
54005

CLASSIFICATION
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

1. PROJECT TITLE <p align="center">Malaria Control</p>			2. PROJECT NUMBER <p align="center">383-0043</p>	3. MISSION/AID/W OFFICE <p align="center">USAID/Sri Lanka</p>				
5. KEY PROJECT IMPLEMENTATION DATES <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%; border-right: 1px solid black;"> A. First PRO-AG or Equivalent FY <u>78</u> </td> <td style="width:33%; border-right: 1px solid black;"> B. Final Obligation Expected FY <u>79</u> </td> <td> C. Final Input Delivery FY <u>84</u> </td> </tr> </table>			A. First PRO-AG or Equivalent FY <u>78</u>	B. Final Obligation Expected FY <u>79</u>	C. Final Input Delivery FY <u>84</u>	4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) <u>81-1</u> <input type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION		
A. First PRO-AG or Equivalent FY <u>78</u>	B. Final Obligation Expected FY <u>79</u>	C. Final Input Delivery FY <u>84</u>						
6. ESTIMATED PROJECT FUNDING <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:30%;">A. Total</td> <td>\$ <u>54,300</u></td> </tr> <tr> <td>B. U.S.</td> <td>\$ <u>16,000</u></td> </tr> </table>			A. Total	\$ <u>54,300</u>	B. U.S.	\$ <u>16,000</u>	7. PERIOD COVERED BY EVALUATION From (month/yr.) <u>February 1978</u> To (month/yr.) <u>September 1981</u> Date of Evaluation Review <u>September 1981</u>	
A. Total	\$ <u>54,300</u>							
B. U.S.	\$ <u>16,000</u>							

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Coordinate USAID actions for fourth procurement of malathion for Project in order to ensure smooth flow of commodities to field operations.	L.T. Cowper	12/81
2. Preparation and approval of a new Plan of Operations to cover Anti-Malaria Campaign (AMC) program for period 1982-1986, including place of AMC in general health services.	Supt./AMC	4/82
3. Annual Program Review to be scheduled for 1982 and 1983.	Supt./AMC and L.T. Cowper	6/82 and 6/83
4. Provision of required staff for field epidemiological surveillance and laboratories.	Supt./AMC	1/82
5. Plans for future donor assistance in Sri Lanka for malaria control; prepare for 1982-86 period.	Supt./AMC L.T. Cowper	6/82

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS <table style="width:100%; border-collapse: collapse;"> <tr> <td><input type="checkbox"/> Project Paper</td> <td><input type="checkbox"/> Implementation Plan e.g., CPI Network</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Financial Plan</td> <td><input type="checkbox"/> PIO/T</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Logical Framework</td> <td><input type="checkbox"/> PIO/C</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Project Agreement</td> <td><input type="checkbox"/> PIO/P</td> <td>_____</td> </tr> </table>	<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	_____	<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	_____	10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT A. <input checked="" type="checkbox"/> Continue Project Without Change B. <input type="checkbox"/> Change Project Design and/or <input type="checkbox"/> Change Implementation Plan C. <input type="checkbox"/> Discontinue Project
<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____											
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	_____											
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____											
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	_____											
11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles) John M. Miller, Chief, Office of Program, USAID Dr. A.N.A. Abeysundere, Superintendent, Anti-Malaria Campaign, Government of Sri Lanka. Larry Cowper, Regional Malaria Advisor, USAID	12. Mission/AID/W Office Director Approval Signature <u>James R. Brady</u> Printed Name <u>James R. Brady</u> Acting Director Date <u>September 29, 1981.</u>												

MALARIA CONTROL PROJECT

Regular Evaluation

13. Summary

The Project Loan Agreement for the Malaria Control Project was signed on February 28, 1978 between the Democratic Socialist Republic of Sri Lanka (GSL) and the United States. This agreement provided for \$12.0 million to assist the GSL in the procurement of required supplies (mainly insecticides), training and equipment (safety equipment, nozzle tips). An additional \$4.0 million was obligated for this project by Loan Amendment No.1 signed on August 30, 1979 between the two governments. This additional funding provided additional support to malaria activities in the Mahaweli and other settlement areas for procurement of insecticide and other commodities; training and local cost support funds; and for the repair and rehabilitation of the Malaria Training Centre and insectary in Colombo. Thus, a total of \$16.0 million has been provided by the United States to assist the GSL to carry out its Malaria Control activities. The life of the project is FY 1978 to FY 1984.

As of June 30, 1981 a total of \$16.0 million had been obligated; \$10.31 million had been committed; and a total of \$8.044 million accrued as expenditures from this loan.

Other donors to the Malaria Control activities include the World Health Organization (WHO) \$500,000; the Government of the Netherlands (\$4.0 million) and the British Government (\$2.3 million) over the period of the 1977-1981 approved Plan of Operation for Malaria Control. A summary of the AID project inputs is as follows:

	<u>1977 Tranche</u>	<u>1978 Tranche</u>	<u>1979 Tranche</u>
Insecticides	\$4,970,000	6,928,000	\$3,360,000
Training	30,000		66,000
Drugs			335,000
Operational Equipment		72,000	39,000
Local Cost Support			<u>200,000</u>
TOTAL	<u>\$5,000,000</u>	<u>\$7,000,000</u>	<u>\$4,000,000</u>

The Government of Sri Lanka proposes to provide \$31.8 million of the estimated \$54.3 million total project cost or approximately 59% of the total cost of the project through 1983.

Malaria has been a serious problem in Sri Lanka for centuries. In 1946 the Government began its long struggle against the disease through a formal malaria control program. By 1963, only 17 cases were detected and the disease was brought under control for the first time in the country's history. However, this apparent victory was short-lived as malaria began to reappear towards the end of the 1960s. This was primarily due to mosquito resistance to the insecticide DDT. This, combined with the need for health worker refresher training, increased field staff and adequate equipment and supplies for the AMC contributed to a resurgence of malaria cases reaching epidemic proportion by 1975. In 1975, the country recorded 400,777 malaria cases. The actual number of cases in 1975 probably exceeded 1.0 million. Increased infant mortality and general illness and debilitation of the work force were evident in affected areas. The GSL's program uses malathion, the best cost effective replacement insecticide for DDT, in its spray operation program. The present malaria program in Sri Lanka, which began in FY 77, proposes the control of malaria within a five-year period. The total recorded caseload of malaria in 1978 was 69,685. In 1980, a total of 47,949 cases of malaria were recorded in Sri Lanka.

This project was specifically aimed at assisting the GSL in reducing the incidence of the disease to a level where this disease is no longer a public health program in Sri Lanka's health environment. For Sri Lanka, a satisfactory level of malaria incidence was considered to be no more than 1000 cases per million population or approximately 15,000 cases per year. In addition, the GSL aimed at control of the malaria species, P.falciparum, to low case levels and possible elimination. It is this species of malaria which causes high mortality in non-immune populations especially infants and children. In 1980, P.falciparum species represented only 2.9% of the total positive case load. Approximately 85% of Sri Lanka's population live in malarious areas and are at risk to the disease. Malaria in Sri Lanka is primarily a rural disease with special importance to the Dry Zone of the country. It is in the Dry Zone that the GSL is presently investing large sums of capital in the Mahaweli Development Project and many other resettlement and agriculture projects. The importance of malaria control in these areas can not be over-rated.

Although the program was scheduled to be initiated in the spring of 1977, it did not begin until August/September of 1977 due to civil disturbances within the country. However, Dutch-supplied malathion was in place as planned and provided an effective base to

launch the program. The results were dramatic with case rates dropping from 262,460 in 1977 to a reported 47,949 in 1980. The percent of *P.falciparum* was reduced from just under 16.0 percent of the total cases in 1975 to 2.9 percent of the total positive cases in 1980. This rapid reduction in *P.falciparum* indicates interruption in malaria transmission. The program is now stratifying its operational areas for planning purposes for the New Plan of Operations 1982-1986, which will decrease spraying operations and increase surveillance and drug treatment activities. The anti-malaria efforts are making good progress towards the stated objectives, but a long term GSL commitment to this activity is necessary which will require staff, materials and financial support for many years if the gains in health improvement which have been made since 1977 are to be maintained. While the program's interim targets have been achieved, there is still a major operational effort ahead to obtain the level of malaria control which the GSL has targeted in its overall health planning.

14. Evaluation Methodology

The evaluation methodology used in this Project Evaluation Summery (PES) includes a review of the three in-depth Evaluation reports made on the progress of the Anti-Malaria Campaign by a joint GSL/WHO/British/Netherlands/USAID team of malaria specialists in November, 1978, February, 1980, and June, 1981; reports and yearly administrative reports of the Anti-Malaria Campaign (AMC); minutes of Regional Conferences; and field observations of the USAID Regional Malaria Advisor who served as monitor for USAID/Sri Lanka for this project. A study of GSL and USAID documents (including the Project Paper as amended, Loan Agreement and yearly AMC annual reports) was also carried out during this PES. Discussions and report reviews were also held with the three World Health Organization (WHO) malaria specialists assigned to the GSL Anti-Malaria Campaign who provide advisory technical assistance to this activity.

This PES uses the presentational technique of comparing the logical framework output/purpose/goal objectives of the Project Paper, as amended, with the present state of program progress in meeting those objectives at this point in time of the Project.

15. External Factors

Sri Lanka has experienced considerable economic development over the last few years and numerous irrigation, settlement and similar projects have been completed or are in the process of being completed during the life of this project. The major GSL development effort which impacts on the project is the Mahaweli Development Program with settlements already in place in "H" - System and rapidly being established in "C" and "B" Systems. Such projects

have considerably increased the malariogenic conditions of the country and will continue to do so as these settlements develop. In addition, the transit populations of laborers who live at the work sites in temporary huts are often stricken with malaria and are a cause of re-establishing malaria in their villages upon return to their home areas. The PP amendment recognized this increase in malariogenic potential and funded activities to modify and contain the expected increases in malaria.

An additional external factor has been the increase of legal and illegal gem mining operations throughout the island. Historically, the major gem mining centers have been identified with the Ratnapura area. However, the recent discovery that gems may be found in many parts of the island has resulted in opening up many areas for this activity. The malaria problem which results from this gem mining activity is that miners dig shallow holes in the dry stream beds, on the banks of the streams and at various distances from the stream in their search for the gems. These holes fill with water during the rainy season and create mosquito breeding sites. Also miners live in very temporary huts and are constantly exposed to malaria. When miners are taken sick they often return to their home villages carrying malaria which infects that area. The problem is not small as probably 8-9,000 people are actively working at gem mining on a daily basis. The AMC is providing additional anti-malaria services to these areas such as focal spraying and distribution of anti-malaria drugs. It should be noted, however, that the AMC is a government agency and illegal operators are not keen to state where they contract malaria or where their mining sites are located and many malaria foci are not detected on a timely basis.

The GSL continues to assign high priority to malaria control as evidenced by its fiscal allocations. The following summary table will indicate the level of support during the project period.

<u>Year</u>	<u>Budget Approved and Allotted (Rs)</u>	<u>Budget Expended (Rs)</u>
1978	82,775,550	86,348,570
1979	136,531,100	120,627,093
1980	82,763,100	81,481,350
1981	105,543,300	-

The AMC takes between 15% - 10% of the Ministry of Health's budget each year. Malathion and other commodity procurement financed by foreign assistance are included in these budgets. The higher figure for 1979 is due to a large initial purchase of malathion (4.0 million lbs) and the lower figure in 1980 from a lower purchase level (2.5 million lbs) which was made to adjust malathion supply flow. In general, there has been no real difficulty with GSL program funding for support of local costs. It is considered important that the GSL review future program requirements, including additional donor assistance for the period of the next five-year plan(1982-86).

One of the favorable external factors in the project has been the timely and effective procurement of malathion. The flow of malathion into the operating program has been excellent and there has been no delay due to lack of supplies. The procurement techniques used will be described under the "lessons learned" portion of this report.

Chena cultivation is also a factor in the management of the disease as these "slash and burn" cultivators are difficult to locate and often live in very temporary shelters which are not suitable for spray protection. This type of farming has been done for centuries and the AMC has adjusted its program to meet this problem as well as it can.

The project was delayed for a few weeks in mid-1977 due to disturbances and unrest on the island, but since that time the program schedule has not been interrupted. Even the very recent communal problems have not affected the actual spray program, but did interrupt some supervision travel.

There was some concern that the drought conditions in 1980 would bring on a rise in malaria. In the past, such droughts have resulted in drying streams and creating pooling conditions which led to wide-spread mosquito breeding and subsequently to malaria outbreaks. However, only four or five focal areas appeared to have been affected by this drought condition in 1980/81. Special measures were instituted at these focal outbreaks by the AMC to control the disease. However, several hundred cases of malaria did occur and it served as a good example of how receptive Sri Lanka is to malaria.

16. Inputs

The major AID project inputs are commodities which have consisted to date entirely of malathion, 50% wdp. There have been three major AMC procurement actions to obtain the malathion - 1978, 1979, 1981 (Jan). All malathion used in the program has met USAID specifications and has been produced in the U.S. 86% of the malathion has been delivered to Colombo by U.S. flag vessel. All malathion procurement

actions have been carried out through the Embassy of Sri Lanka in Washington with the assistance of AID/W supply specialists from the SER/COM/ASIA Office. A technical representative from the AMC and a representative from External Resources Department of the GSL have been present at the bid openings and at the award of each bid.

There is presently a \$72,000 order for 5,000 spray pump nozzle tips and some safety equipment under procurement, but these orders have not reached Sri Lanka as yet. No other commodity procurement is proposed for the remaining portion of the project except malathion or other insecticides.

The WHO has assigned three scientists to the Project as agreed during the development of this project. These officers provide required technical assistance to the AMC on a daily basis. The WHO/SEARO Regional Malaria Advisor stationed in New Delhi makes periodic trips to the program for policy and evaluation purposes. The British Government provided a year's service of an experienced Transport Officer who assisted in the procurement and mobilization of the 130 Landrovers provided by U.K. to the AMC.

Training has been carried out on schedule over the life of the project. The Project Paper projected approximately 15 man-months for training and approximately 10 person-months have been used to date for five (5) Medical Officers and six (6) Public Health Inspectors in observation grants to either the U.S. or regionally or a combination, with emphases on Asia regional training which would permit additional person months of training. Three of the medical officers visited work sites at the Centers for Disease Control, Walter Reed Hospital and the Navy Medical Research Unit to review on-going parasitological and epidemiological research studies and to get up-dated on progress in this field. The five (5) Public Health Inspectors participated in field observations in Thailand and Nepal for one month. The USAID's involvement with this training were very helpful and assisted greatly in making these visits a success. Two more regional observation tours for eight Public Health Inspectors are scheduled for FY 82. Two medical officers are also being processed for a four-week training experience in epidemiology and parasitology during FY 1982.

The monitoring inputs to the project have been made by the USAID Regional Malaria Advisor (RMA) as agreed by the Asia Bureau and USAID/Sri Lanka. Forty percent (40%) or more of RMA's time and activities each year have been directly devoted to the Sri Lanka Malaria Control Project. Activities with the project have included field monitoring, training, program planning and documentation, assisting in the preparation and implementation of annual program reviews, technical coordination with WHO staff assigned to the Project and attendance at regional, headquarters and Ministry of Health conferences. The RMA attended the India-Maldives-Sri Lanka inter-country conference on malaria for the USAID. The major field monitoring function was

focused on malathion safety procedures, staff training in applying and storing malathion, proper scheduling of cholinesterase testing for spray personnel and emphasizing the requirement for protective clothing for spraymen. After four years of continuous spray operations, there has not been one serious case of malathion intoxication reported in the AMC program and very few (less than 20) cases of mild intoxication. Over 14.0 million pounds of malathion have been applied in the 1977-1981 (Sept.) period. This safety record is outstanding.

During the planning stage of the project an Environmental Assessment (EA) was completed. This input is in line with AID policy on integrating environmental concerns with other aspects of program design in development of such major assistance programs. The EA concluded that application of residual insecticides by standard malaria program methodologies has no significant adverse impact on the environment. Similar environmental studies completed for Thailand, India and Nepal have also reached the same conclusions in their EA documents.

17. Output

The expected program outputs for the malaria control project are detailed in the Project Paper (Pg.53) and in the logical framework of the Project Paper Amendment. A summary of the expected project outputs and actual accomplishments during the course of the project period are outlined below:

<u>Item:</u>	<u>Project Paper Targets</u>	<u>AMC Program Summary Accomplishment Statement</u>
1	The GSL will develop and approve a long-term Plan of Operation.	1. The Plan of Operations for the Five year period 1977-1981 was approved by GSL and replaced the Plan of Operation signed in 1972.
2	Yearly Plans of Action will be prepared and implemented.	2. Yearly Plans of Action have been prepared and are a part of the CP's on the loan. A new Plan for August 1981 - August 1982 has recently been prepared and approved.
3	AMC personnel trained in vector-control methodologies (larviciding, fogging, source reduction)	3. Approximately 200 AMC technical personnel from Regional Offices and national headquarters have

<u>Item:</u>	<u>Project Paper Targets</u>	<u>AMC Program Summary Accomplishment Statement</u>
		<p>been given a four day course in bio-environmental malaria control. The WHO Technical Officer organized and presented these courses. The RMA participated in 3 of 7 of the courses as an instructor.</p>
4	<p>No. of cases of malaria to be 60,000 or less by 1982 and to be approximately 15,000 cases by 1984.</p>	<p>4.No.of cases in 1980 was 47,949. It is expected that 1981 will show additional improvement in case rates.</p>
5	<p>Village education program initiated.</p>	<p>5.A great deal of effort has gone into initiating village volunteer support. These volunteers are given a short training course by the AMC Regional personnel on how people become affected with malaria, how to avoid malaria and the schedule for treatment of clinical cases of malaria. Educational materials are also provided to the treatment posts in the villages. All regions have a large number of village volunteers providing anti-malaria drugs for fever cases. The best example is in li-System of the Mahaweli Project in the Anuradhapura region where over 300 such volunteers are in place.</p>
6	<p>Drainage projects in Operation</p>	<p>6.(a) The water management scheme at Polgolla Dam has been developed to flush the downstream side during the dry season. This effort has eliminated the need for spraying of villages along the river for about 10 miles.</p> <p>(b) AMC is represented on the Health Committee of the Mahaweli Board and is a part of health policy development for this project.</p>

<u>Item:</u>	<u>Project Paper Targets</u>	<u>AMC Program</u> <u>Summary Accomplishment</u> <u>Statement</u>
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|---|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 7 | (a) Spraying operations undertaken according to Plan. The percent of houses sprayed by year and status of coverage. | 7. (a) Spray operations are in the 16th round of spraying as planned. Summary of spray accomplishment is given as follows: |
|---|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|

Coverage (Pg.54) - Project Paper

<u>Year</u>	<u>% to be covered</u>	<u>Year</u>	<u>% covered</u>	
			<u>Fully</u>	<u>Partial</u>
1	80%	1978	65	23
2	80%	1979	64	23
3	80%	1980	62	24
4	80%	1981	-	-
5	80%	1982	-	-

In general, the spray coverage can be considered at approximately 75% which is satisfactory for malaria control. However, some areas reported a lower coverage figure and increased efforts are necessary in those areas.

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|-----|--------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------------|
| (b) | Spray Operations undertaken and projected number of houses to be covered (PP). | (b) | Spray Operations carried out and number of targeted houses per round (average). |
| | 1978 738,000 | | 1978 970,000 |
| | 1979 784,000 | | 1979 950,000 |
| | 1980 589,000 | | 1980 950,000 |
| | 1981 390,000 | | 1981 950,000 (Est.) |

The higher spray coverage is due to: (1) inclusion of the Mahaweli settlement areas which were not included in the original planning, and (2) the Evaluation Team's Recommendation in 1980 not to reduce coverage due to lack of adequate epi. data.

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|---|---------------------------------------------------------------------|----|---------------------------------------------------------------------|
| 8 | Surveillance and case detention outputs projected in Project Paper. | 8. | Actual accomplishments by year for surveillance and case detention. |
|---|---------------------------------------------------------------------|----|---------------------------------------------------------------------|

	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
a. ACD No.	248	254	458	880	82	68	78
b. PCD No.	200	200	300	300	270	306	230 (APCD)
c. Blood films to be collected (in Millions)	1.3	1.3	1.4	1.5	0.97	1.0	0.9

The ACD (Active Case Detection) methodology has been found to be ineffective in Sri Lanka. All surveillance efforts are now being focused on establishing approx. 600 APCD (Activated Passive Case Detection) agents by the end of 1981. The reduced no. of slides is due to vacancies in microscopists. Recruitment for 90 microscopists was done in August 1981. Microscopist training began mid-September. The epidemiological surveillance system is not adequate and an additional 400 persons have been approved with recruitment interviews completed in mid-August 1981. The development of PCD (Passive Case Detection) institutions has lagged in spite of circulars from the MOH to collect slides from fever cases. This is a major problem area and must be solved if malaria integration is to occur (data from AMC Administrative Reports for year). The Annual Blood Examination Rate (ABER) is low and should be increased.

9. Projected Drug Treatment of malaria cases (1000), (PP Projections)

<u>Items:</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
Pos. cases treated	130	90	50
Presump. treated	250	150	100
Mass Drug	38	38	50
Proph. Treatment	470	470	200

9. Recorded cases treated by ANC by year (1000).

<u>1978</u>	<u>1979</u>	<u>1980</u>
70	50	47(1)
900	1000	803(2)
N/A	89	60 (Est.)
203	155	160 (3)

- (1) The positive cases actually treated are the same as detected for the year.
- (2) Presumptive treatment levels are much higher, but accurate statistics from PCD institutions on clinical diagnosis and treatment are not available.
- (3) Proph. treat. data is not reliable as AMC records do not include many settlement schemes where drugs are disturbed through the project officers, but double or triple the listed number is estimated.

10. Training projected in Project paper.

10. Training Accomplishments (AMC records).

<u>Item</u>	<u>1979</u>	<u>1980</u>	<u>1979</u>	<u>1980</u>
Pub. Health Insp.	100	100	60	72
Microscopists	50	50	-	-
AMC Field Asst.	500	500	-	588
Spray Superv.	45	45	-	51
Sprayers	1000	1000	2129	2038
Volunteers	500	500	500+	500+
MOH Sr. Staff	-	25	105	33
Dist. Health Off.	75	75	97	98 (UN Doctors)
P.H. Nurse	100	100	45	46
Asst. Med. Pract.	75	75	16	69
Midwives	300	300	291	335
Medical Students	200	200	150	224

In addition, the Training Center in 1979 trained 38 Primary Health workers, 45 "barefoot" doctors, 43 persons in bio-environmental measures. In 1980, the AMC Training Center also provided training in malaria control to 42 plantation industries workers, 164 family health workers and 30 Social Department officers, as well as 7 post-graduates from the London School of Tropical Medicine and Hygiene. The AMC Training Center is managed by a full-time Medical Officer. The major gaps in training are microscopists and Field Assistants. Recruitment for these posts was completed in August 1981 and it is planned that a major training effort will be completed during the last quarter of 1981.

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| 11. Transport availabilities as projected in the Project Paper. | 11. Off-road transport situation by year.
(130 of fleet are new Landrovers in 1980) | | | | | | | | | | | | | | | |
| <table border="0"> <tr> <td></td> <td style="text-align: center;"><u>1979</u></td> <td style="text-align: center;"><u>1980</u></td> </tr> <tr> <td>Off-road</td> <td style="text-align: center;">25%</td> <td style="text-align: center;">15%</td> </tr> </table> | | <u>1979</u> | <u>1980</u> | Off-road | 25% | 15% | <table border="0"> <tr> <td></td> <td style="text-align: center;"><u>1979</u></td> <td style="text-align: center;"><u>1980</u></td> </tr> <tr> <td></td> <td style="text-align: center;">10%</td> <td style="text-align: center;">10% or less</td> </tr> </table> <p>69 auctioned vehicles not included in totals.</p> | | <u>1979</u> | <u>1980</u> | | 10% | 10% or less | | | |
| | <u>1979</u> | <u>1980</u> | | | | | | | | | | | | | | |
| Off-road | 25% | 15% | | | | | | | | | | | | | | |
| | <u>1979</u> | <u>1980</u> | | | | | | | | | | | | | | |
| | 10% | 10% or less | | | | | | | | | | | | | | |
| <p>12. Approved Plans of Action to be prepared.</p> <table border="0"> <tr> <td></td> <td style="text-align: center;"><u>1978</u></td> <td style="text-align: center;"><u>1979</u></td> <td style="text-align: center;"><u>1980</u></td> <td style="text-align: center;"><u>1981</u></td> </tr> <tr> <td></td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> </tr> </table> | | <u>1978</u> | <u>1979</u> | <u>1980</u> | <u>1981</u> | | 1 | 1 | 1 | 1 | <p>12. <u>1978</u> <u>1979</u> <u>1980</u> <u>1981</u> Plans Prepared.</p> <table border="0"> <tr> <td></td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> </tr> </table> | | 1 | 1 | 1 | 1 |
| | <u>1978</u> | <u>1979</u> | <u>1980</u> | <u>1981</u> | | | | | | | | | | | | |
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| | 1 | 1 | 1 | 1 | | | | | | | | | | | | |
| 13. Laboratories are effectively operating. | 13. It was the evaluation of the 1981 assessment team which reviewed the AMC in June 1981 that AMC laboratory services were of good standard and technically operating in a satisfactory manner. | | | | | | | | | | | | | | | |
| 14. Research schemes implemented in the AMC. | <p>14. Support of malaria research is a part of this USAID project. The GSL/AMC has supported research activities during the project period. Research activities include:</p> <ol style="list-style-type: none"> (1) monitoring of <u>P.falciparum</u> resistance to chloroquin; (2) G₆PD studies in field areas using both in-vitro and in-vivo tests; (3) testing of alternative anti-malaria insecticides; (4) research in entomology as to its role in malaria transmission. The loan provides funding for the development of an insectary at the AMC. An insectary plan is now being reviewed by the GSL Building Department for cost and materials. | | | | | | | | | | | | | | | |

18. Purpose

The project purpose is "to bring malaria under control" which is defined in the GSL/WHO Plan of Operation as an Annual Parasite Incidence (API) of one (1) case per 1,000 population or 1,000 cases per million and control of P.falciparum malaria. The GSL has made considerable progress in reducing malaria in recent years as can be seen in Section No.17 of this PES (Item 12).

The following is a summary of the case rates reported by the AMC by year:

<u>Year</u>	<u>Total Positives</u>	<u>Cases of P. Vivax</u>	<u>Cases of P.falciparum</u>	<u>% of total of P.falciparum</u>
1977	262,460	251,726	10,431	3.9
1978	69,685	67,809	1,826	2.6
1979	48,004	46,636	1,313	2.7
1980	47,949	46,476	1,421	2.9

As can be seen by the table above the program has made good progress to its mid-point and it is hoped that this progress can be continued. The AMC surveillance mechanism is improving each year. While the numbers of cases between 1979 and 1980 appear to be declining slowly, the actual improvement in the case detection mechanism in 1980 provides a more accurate case figure. No deaths from malaria were reported in 1980 for Sri Lanka.

19. Goal/Sub-Goal

The goal of this project is "to reduce morbidity and mortality from endemic diseases through the establishment of a responsive, effective and efficient nation-wide health service." The USAID Malaria Control Project significantly contributed to this goal by assisting in the reduction of both reported malaria morbidity and mortality. The gains over the project period can be attributed to: (1) continuation of effective residual insecticide spray application, and (2) the establishment of widespread treatment facilities through health institutions and volunteer treatment posts.

20. Beneficiaries

The primary beneficiaries of the malaria control program are the rural poor of Sri Lanka as malaria remains essentially a rural disease. As 80% of the population live in rural areas of Sri Lanka and 85% of the country is at malaria risk, it is to this rural situated group that the project provides the most benefit.

The active collaboration of village and community volunteers with AMC activities is socially beneficial to the country. The people of a village learn through such collaboration that the Government is

interested in their problems and in turn they can learn to take a role in overcoming a health menace to themselves and to their families. The carry-over of such successful experiences to other areas of health or to other community-action programs is extremely useful in overall rural development.

21. Unplanned Effects

The project has had a number of unplanned effects in the course of its operation. Some of these effects are summarized below:

- (a) The project has increased environmental awareness of Sri Lanka officials to the human and ecological effects of mass applications of insecticides. It is believed that a good deal of research in alternative malaria control methodology has been stimulated by the project's emphasis on environmental protection. There is no question that insecticide safety precautions and environmental protection are now given a more prominent place in the training schedules of spray personnel and in the planning of malaria control activities.
- (b) The expected lack of effective insecticides in the future has stimulated the AMC to greater efforts in community involvement and in establishing volunteers to provide anti-malaria drugs to suspected fever cases at the village level.
- (c) The program has made use of several alternative methods of malaria control which were not considered at the time the project was written. One of these measures is the successful use of water management by periodic flushing of the stream bed on the downstream portion of Polgolla Dam to control An. culicifacies breeding and to eliminate a source of focal malaria.

22. Lessons Learned

A lesson to be remembered in carrying out such projects is the importance of inter-sectoral cooperation between malaria activities and other offices of the Government e.g. irrigation, health, public works, roads and agriculture. Such coordination at the planning stages lessens the risk of creating conditions through development activities which lead to an increase of malariogenic conditions. There is need to continue to press for coordination in light of the widespread Mahaweli Development Project and the settlement of thousands of settler families in malaria endemic portions of Sri Lanka.

Another lesson to be learned is that simplification of all AID's project assistance procedures and other donor country requirements are essential to project implementation and evaluation. There is simply not enough GSL manpower (nor will there be) to respond to the

specific reporting requirements and the various forms of all donor groups in a timely fashion. This malaria control project probably is closer to the way that an assistance loan should be negotiated with the GSL as far as documentation and evaluation are concerned, but it could have been improved by simplifying the Conditions Precedent. It was of immense help in managing the project to have an established institution to work with in carrying out the project.

The procurement procedure of this project have worked extremely well and may be of use to other USAID's in their supply activities. In brief, all procurement has been done through the Sri Lankan Embassy in Washington. The SER/COM/ASIA has assisted in getting the IFB into commercial channels and with other documentation. At the time of the bid opening, the AMC Superintendent and another GSL representative from the External Resources Department are present in Washington. The details of the bid amounts or shipping schedules are finalized on the spot with the successful bidder. It has proven to be a successful method.

Internationally, the program has had effect as it is a subject on which Sri Lankan scientists as well as malaria officers from other parts of Asia can meet to discuss their common border or inter-country malaria problems. Three such inter-country meetings have been held during the course of the project and have provided useful interchange. It may be worthwhile for other parts of the world who have similar malaria conditions within the countries in their regions to consider such border and inter-country meetings.

23. Special Comments or Remarks

- A. No additional policy or program management comments need to be included.
- B. The number of pages for this PES is 15 plus the joint GSL/WHO/AID/British evaluation report of June, 1981, (as an attachment A).