DRAFT 011-150

APWELL PROJECT (India)

(The Netherlands Assisted Project)

Government of the Netherlands
Ministry of Foreign Affairs
Directorate General
International Cooperation

Government of India
Ministry of Water Resources
Government of Andhra Pradesh
Irrigation Development Corporation

ANDHRA PRADESH GROUND WATER BORE WELL IRRIGATION SCHEMES

(APWELL PROJECT)

(IN/025602)

INCEPTION REPORT

Project Number : 417.4116.1

BKH
The Netherlands

EUROCONSULT
The Netherlands

IRDAS
India

INCEPTION REPORT

Project Number : 417.4116.1

THE PROJECT

1 THE PROJECT

1.1 Project Execution

The APWELL project is being implemented under the Bilateral Development Cooperation Program of the Indian and the Netherlands Governments. The official name of the project is, "The Indo-Dutch Ground Water Borewell Irrigation Schemes". Its project numbers are the IN025601 (FA) and IN025602 (TA), respectively.

The executing agencies are the Irrigation Development Corporation of the Ministry of Irrigation, Andhra Pradesh and the Directorate General for International Cooperation of the Ministry of Foreign Affairs, The Netherlands. Consulting services are provided by Euroconsult, the Netherlands, as the lead firm, BKH, the Netherlands and IRDAS, India.

1.2 Area, Period and Cost

The project area comprises seven districts of Andhra Pradesh, namely, Mahbubnagar, Kurnool, Anantapur, Prakasam, Nalgonda, Chittoor and Cuddapah. The project duration is six years for the involvement of the NGOs and five years for the provision of consultancy services.

The basis of the agreement to implement the Project was the Project Document of February 1993 and the sideletter from the Royal Netherlands Embassy of August 1994. Under the agreement the Netherlands will provide a maximum of NLG 39 million and the Andhra Pradesh Government will provide an estimated INR 56.9 million for establishment charges. The contribution of the beneficiaries will consist of part of the construction costs and is estimated at INR 37.2 million. Of the Netherlands contribution, NLG 26.847 million is Financial Assistance reimbursable through the Andhra Pradesh Government for certain project expenses and the rest is for consultancy services and other costs. The budget in Chapter 9 shows the Financial assistance, the NGO contracts and the Environmental components only. The latter two components form part of the consultancy contract and were to be specified in the Inception Report.

1.3 Pilot Phase

Years 1 and 2 of the Project will be a pilot phase. The Mid-Term Evaluation will therefore be a Pilot Phase Evaluation, for re-assessment of the goals that the project can establish 5400 productive borewells, that 500 sick borewells can be rehabilitated, that the well failure rate will be only about 25%, that the succesful wells can irrigate about 5.5 ha each (3 ha in the dry season) or a total of about 30,000 ha, and that the target population will be reached.

The Pilot Phase will also test the methodology and appraoch. It will test some basic assumptions underlying the project: that an irrigation project is an adequate vehicle to achieve all the stated objectives for women and small farmers, that small and marginal farmers will form stable groups for borewell management, pay their expected share of installation, and maintain and use profitably the borewells, and that selection of borewells can be such that water availability on the long term is guaranteed.

While the original targets of borewell installation and rehabilitation as given above will be maintained for the time being, the proposed phasing of drilling is much slowed in the Pilot Phase. Once the developed methodology and approaches and the assumptions have been properly tested, and a certain routine has been established, borewell drilling can be speeded up. In consultation with APSIDC the target for the establishment of new borewells has been set at 380 and for revitalization of sick borewells at 50 (Annex 1: Phasing of Borewells). Activities will be centred in three selected villages (see also Chapter 5).

1.4 Objectives

The long term objective of the project is to improve the living conditions of the small and marginal farmers in the project area. This will be achieved through sustainable and environmentally sound interventions, in such a way that women farmers can become equal partners of the male farmers in agriculture and other activities.

The short term objective is to increase agricultural production of small and marginal farmers in a number of districts in Andhra Pradesh through the provision of ground water irrigation facilities.

The project will assist small and marginal farmers, organized in water users associations, with the construction and operation of sustainable small-scale borewell schemes. The project activities will focus on ground water resources development, land and water management, gender and environmental issues. Activities will be implemented through APSIDC and through NGOs, and DGOs with Technical Assistance, during five years, of a mixed national and international team of consultants.

The Nalgonda pilot project, as part of the APWELL project, will prepare, on a pilot basis, detailed ground water development plans for the district of Nalgonda. This will be accomplished through close collaboration with the Ground Water Department. The results of the Nalgonda pilot project will be made available to GWD and to other organizations engaged in ground water development.

The Specific objectives of APWELL project are the following:

Social and Institutional

Prior to the construction of borewells, the small and marginal men and women farmers will be organized into formal or informal water users' groups or WUGs. One year after completion, the WUGs will operate, maintain and own the borewells. The members will appoint an operator who will be responsible for the technical operation of the borewell. They will also devise a mutually agreed system of water sharing. The CO work will be done through NGOs which will be contracted out by the Consultant through the Team Leader. The NGOs will form the WUGs into water users' association (WUAs) which may then organize themselves into higher tiers to coordinate services, training and environment management.

Technical (Construction)

When the water users have organized themselves into WUGs and have made the commitment to operate and maintain the bore wells, APSIDC will construct the borewells with full participation of the water users. As mentioned, the number of new borewells to be constructed during the pilot phase will be 380.

The new borewells will be constructed after the following technical activities have been undertaken:

- zone selection;
- hydrogeological, geophysical & resistivity tests;
- yield test by draw down pumping;
- distribution channels constructed by the farmers are in place;
- wells are energized six months after installation;
- wells are constructed in accordance to quality standards approved by the Consultant and the WUG.

The borewell will be utilized for domestic water supply only if its discharge is below that required for feasible irrigation (e.g. if it is below 5M3/hr.) and if water is potable. However, it is not foreseen that APWELL itself will be involved in the actual development of domestic water facilities. One option is that the well be handed over to the community which will seek the services of the appropriate agency, e.g. the Panchyati Raj Engineering Department (PRED) which is the lead agency of the Netherlands Assisted Project on Rural Water Supply. APWELL can assist in linking-up the WUG with this organization.

Gender

APWELL project will focus on the participation of women heads of households and women who are largely living alone. In as much as they comprise the farming population, APWELL will bring benefits to these women in terms of provision of irrigation and transfer of the irrigation infrastructure to farmers.

Moreover, poor women will be formed into women's groups for social and economic activities related to savings and credit. They will also undergo training on crops and water management and operation and maintenance.

To ensure that the mainstreaming of women receive adequate support, APSIDC personnel, NGOs and APWELL will be sensitized to GID-WID related issues.

Finally, regarding women's nutritional needs, although an improvement in the nutritional status of women may well be the result of sustained, efficient, and productive use of the borewell, the correlation cannot be established as a matter of necessity. The nutritional status of women is influenced by a complex set of water-related factors rooted in the social norms and values, gender relations, recognition of women's health as a priority, competitive demands of scarce household resources of poor families, relative considerations of security versus survival and so on. To delineate the contribution of successful borewell irrigation on the quality of women's food intake will indeed be highly complex, intricate and resource consuming task which is well beyond the broad objectives of the project. As such, the Inception Report would recommend against considering this as one of APWELL's objectives.

Environment

Environment will receive significant attention from the project. This means that APWELL will develop the following; a) a model district groundwater master plan for Nalgonda; b) a groundwater monitoring network for all the 7 districts of the project; c) a means of monitoring other environmental aspects of APWELL such as water quantity, water quality, impacts on soils and impact on biotic communities (Lavieren: Mission Report); d) a method of eliciting farmers and village leaders to conceive and plan water resources use at the village level; and e) careful selection of sites in relation to watershed development and water re-charge.

Training

For improved project implementation and development of the attitudes and skills of farmers, APSIDC, NGO personnel and members of WUGs, APWELL will provide various training in the following:

For WUGs and NGOs:

- participatory method;
- irrigation & water management;
- operation & maintenance of borewell unit;
- computation of water costs and charges;
- bookkeeping and record keeping;
- registration and organization of water users association;
- conflict management and group dynamics;
- gender-related issues;
- capital build-up and asset management;
- environmental management;
- soil and water conservation;
- others which will be identified in the course of project implementation.

For APSIDC:

- participatory method;
- CO Method;
- gender-related issues;
- quality control & project management;
- social, institutional, environment, rural economics and technical aspects of the project;
- geophysical survey method and groundwater resource development.

Economics

On the economic side, APWELL will try to achieve the goal of making borewells help increase farmers' production and profit compared with their situation before the project through: a) training of farmers on optimal use of groundwater through proper water management techniques and b) helping them practice improved cropping patterns, including the planting of fruit trees.

The project will target 10 to 20% equity participation of the farmers in borewell construction including their participation in the construction of distribution system, storage tank (if any) and electric connection.

ACHIEVEMENTS SO FAR

2 ACHIEVEMENTS SO FAR

2.1 Start of the Project

The APWELL project officially began on April 1, 1995. The project team leader arrived in Hyderabad on April 8, 1995 after attending a brief consultation at Euroconsult's office at Arnhem, the Netherlands. Shortly after, Mr. N. Chalamaiah was appointed by APSIDC as Liaison Officer. During the first few weeks the team leader met with government officials from the Ministry of Irrigation, Irrigation Development Corporation, Ground Water Department and persons from non-government organizations (NGOs) for exchange of ideas and to ask for their cooperation.

To introduce the Project, and to solicit people's opinions about it workshops were held, attended by representatives from APSIDC, Ground Water Department, Agricultural Department and other government agencies as well as District Collectors and NGOs. During these workshops, the participants alerted the project team to the opportunities as well as potential problems of the project. For instance, the workshop participants agreed that APWELL project has the potential to redress the economic plight of the small and marginal farmers by improving their income. They were also hopeful that women could be brought into the mainstream of social and economic activities together with the men through meaningful participation in community mobilization and operation and maintenance of bore wells. On the other hand, they also cautioned the project on potential pitfalls like failure to locate sites where water is available, failure to energize the wells, attempts of local power structures to co-opt weak water users organizations for their own political ends and the use of methods and approaches that could become unsustainable over time.

In addition, the project team members regularly discussed and reflected together on the project. They frequented the field and consulted the farmers, the APSIDC engineers, the local experts, the district collectors and women groups. The Project engaged the services of NGOs to determine the reasons why borewells get "sick"; to learn the various institutional arrangements of group-managed borewells; and to identify sites where watershed development programs are being done. Regular consultations with APSIDC has also become the hallmark of the project. APWELL has also benefitted from the insights and recommendations of the Commission for Environmental Impact Assessment (MER) of the Netherlands. All these and other related activities have greatly helped to shape the present Inception Report.

2.2 Office Set-up

One of the immediate concerns of the team leader when he arrived in Hyderabad in April was to identify a project office. The original plan was to establish APWELL's office at Huda Complex, the building where APSIDC is. But lack of space in the said place made it imperative for APWELL to look elsewhere. And on June 7, 1995, APWELL project occupied its own office on the third floor of Ashoka Plaza building at Masab Tank after sharing office space with IRDAS for two weeks.

The project equipment which have been purchased so far includes the following: 2 jeeps, 7 486-computers, 6 printers, 1 photocopier, 3 stabilizers, 8 telephone receivers, 1 fax machine, and office furnitures.

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LIST OF ABBREVIATIONS

AIRDS	Action for Integrated Rural Development Society
ANTWA	Andhra Pradesh Training Women in Agriculture
APSEB	Andhra Pradesh State Electricity Board
BIRDS	Bharatiya Integrated Rural Development Society
CO	Community Organizer
DOA	Department of Agriculture
DC	District Collector
DRDA	District Rural Development Agency
DWCRA	Development of Women and Child in Rural Areas
EIA	Environmental Impact Assessment
GID	Gender Integrated Development
GO	Government Organization
GWD	Ground Water Department
IDC	Irrigation Development Corporation
INR	Indian Rupees
IRDAS	Institute of Resource Development and Social Management
M&E	Monitoring and Evaluation
MIS	Management Information System
MQC	Monitoring and Quality Control
NGO	Non Government Organization
NIRD	National Institute of Rural Development
O&M	Operation and Maintenance
PR&RD	Panchayat Raj and Rural Development
PSSS	Phirangipuram Social Service Society
TA	Technical Assistance
TL	Team Leader
UNDP	United Nations Development Program
VASORD	Vasavya Society for Rural Development
VIP	Villages in Partnership
WID	Women in Development
WUA	Water Users Association
WUG	Water Users Groups
YFA	Youth for Action

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2.3 Conceptualizing the Project

In order to strengthen the concept of how to implement the project, the staff has developed the following materials:

- A Concept Paper on the Institutional Framework and Organizational Structure of APWELL Project;
- Criteria for Site Selection;
- Flow Chart on the Organization and Participation of Water Users in the APWELL Project;
- Flow Chart on APWELL Pilot Phase Implementation Process.

In addition, workshops and seminars were held as described in Section 2.1 & 2.10.

2.4 NGO Contracts

APWELL has awarded contracts to the following NGOs:

a) **IRDAS:**

- Study on Sick Bore wells. The study has been completed and will be ready for distribution soon.
- Site Selection Study at Mahbubnagar district focusing on watershed development.

b) **Phirangipuram Social Service Society (PSSS):**

- Study on Group-managed Bore Wells. Study has been completed and will be distributed soon.
- Site Selection Study at Kurnool district.

c) **ThinkSoft:**

- Site Selection Study at Mahbubnagar district focusing on social and gender issues.

2.5 Recommended Pilot Sites

In collaboration with APSIDC, Thinksoft and PSSS were engaged to assist in the site selection process. APWELL also engaged the services of IRDAS to conduct an in-depth study of the groundwater re-charge potential of the proposed pilot sites in Mahbubnagar. The study probed into the question of whether the suggested pilot sites are located within micro- watershed areas and whether a plan for watershed development is being implemented and/or planned to be implemented in those sites. Also, IRDAS investigated whether there are water bodies in those sites which can promote groundwater re-charging. Based on the recommendation of IRDAS and further verified by the findings of the project team, the **village of Appaipalli in Lingal Mandal** was fixed as the pilot site in Mahbubnagar district. Three clusters of borewells in this village were identified as possible sites.

For Kurnool district, further narrowing down of the list of villages to the most probable ones is still being done.

2.6 Gender Integrated Development

The following GID-related activities have been accomplished:

Field visits:

Field visits were conducted by the local GID Expert and the Farmer Participation Specialist in the districts of Prakasam, Mahbubnagar, Nalgonda, Anantapur and Kurnool to become familiar with issues related to women and to touch base with development agencies involved in women-related programs. Similarly, the GID expert also did intensive interviews of both government and NGO staff who are engaged in organizing thrift and savings societies which had significant impact in the State of Andhra Pradesh. Examples of GOs and NGOs that were contacted are the following: DOA, PR&RD, DRDA, Tribal Welfare Department, TIMBUCK TOO, BIRDS, AIRDS, VIP, VASORD and YPA.

Dr. Ruth Urben, GID & WID expert, visited the project from June 13-30,1995 . During her stay, she had ample discussion with non-government organization which are engaged in working with women. She also visited the field where she met women farmers who are engaged in various agriculture-related activities. Dr. Urben produced a Mission Report where she made recommendations on how to integrate women in project activities.

Documentation:

Quite a number of training materials and other documents related to women have already been gathered by the team (Annex 2: List of GID/WID Materials).

Networking:

A network has been established with both government and non-government organizations which are engaged in assisting women's groups in the area of agriculture development. Examples of these organizations are ANTWA, DRDA, UNDP, DWCRA, WB & NIRD.

Development of Strategies for Women Involvement:

Through consultation and discussion with women who are involved in women related activities in the State of Andhra Pradesh, a tentative strategy and plan for involvement of women in APWELL project has been developed by the local GID expert, the Farmer Participation/Privatization Specialist and the expatriate WID expert (see WID Expert's Mission Report).

2.7 The Nalgonda Pilot Project

From April 25-May 17, 1995 Mr. Luit-Jan Dijkhuis and Mr. Martien Lodder, the two hydrogeologists from BKH visited the project and conducted preliminary survey of the Nalgonda pilot project (see: Mission Report). The Nalgonda pilot project will begin in earnest beginning October 1995 when Mr. Dijkhuis returns from the Netherlands.

The main objective of the Nalgonda pilot project is to prepare a model District Groundwater Management Plan. This will be accomplished through various studies and data collection. The studies will identify relevant geological zones and basins/watersheds, and set up a database for ground water management. It will formulate recommendations on long-term policy about ground water exploitation, and will define the necessary restrictions to borewell spacing.

2.8 Environment

From June 7-14, 1995, the Environmental Impact Assessment Commission Mission from the Netherlands visited the project. The Commission looked into the environmental-related factors of the APWELL project and formulated recommendations concerning the execution of APWELL with reference to the following main subjects: sustainable use of groundwater, social (gender) and health aspects, criteria for site selection and monitoring and evaluation (see MER Commission's Advisory Review of the Environmental Impact Statement, APWELL 14,1995).

From June 5-14, Euroconsult's Environmentalist, Mr. Bart Van Lavieren also came to the project. His visit was made to coincide with that of the MER Commission so he could be available for consultation if and when the need arises. Mr. Lavieren joined the MER Commission both during their meetings with different government agencies and in their field visits. His Mission Report focused on key environmental issues like water quantity, water quality, absence of laws to regulate borewell installation in the area. The Mission Report further recommended effective water use through adequate cropping pattern, extension training to farmers and institutional strengthening of government agencies like the Irrigation Development Corporation and Ground Water Department.

2.9 Monitoring and Evaluation

From July 13-30,1995, Mr. Jos de Kraker, the Monitoring and Evaluation Expert of Euroconsult visited APWELL project. Together with his local counterpart, Dr. M. Rajagopalan, they have developed a monitoring and evaluation instrument for the use of APWELL project.

As part of monitoring work, APWELL's MQC local expert is in the process of preparing a package of Total Quality Control Management Program (TQCMP) which will be installed within the Irrigation Development Corporation. This is in line with the plan to develop the in-house capacity of APSIDC to adequately address both the technical as well as the institutional and managerial needs of implementing irrigation projects. The package includes an investigation into the current quality control procedures of APSIDC and the training of concerned APSIDC personnel on quality control management.

2.10 Seminars, Workshops and Other Activities

On project concept

On May 3 & 4, 1995, APWELL Project organized a workshop. The objectives of the workshop were to a) provide a venue wherein the participants could discuss, challenge, question and suggest measures that would help clarify project concepts and help improve the implementation procedures of APWELL; b) discuss constraints that could hinder the attainment of project objectives; and c) determine ways how overcome them. The workshop was participated in by APSIDC, GWD, IRDAS, Euroconsult, BKH and Thinksoft.

On Pilot Sites

On May 28,1995, a district level workshop was held in Mahbubnagar. Through the workshop both the public and some of the NGOs operating in the district were informed of the plan to select pilot sites in the Mahbubnagar district. The workshop was organized through the cooperation of the District Collector.

On "Sick" and Group-Managed Borewells

On July 27,1995, a one-day workshop was held at Hotel Viceroy, Hyderabad to discuss the findings of two short studies, namely, a) A Study On "Sick" Borewell and b) A Study On Group-Managed Borewells. The workshop was attended by the Chief Engineer, APSIDC, Executive Engineers, Deputy Executive Engineers and Assistant Executive Engineers from 4 districts where the above mentioned studies were conducted which are under the coverage of the APWELL project. APWELL's Team Leader and all APWELL staff were also present at the said workshop.

2.11 Field Activities

Regular field trips of the staff also characterized the first five months of the project. These trips were done to achieve the following: 1) monitor the on-going studies on the Sick Bore Well, Group Managed Borewells and their Economic Aspects ; 2) conduct individual and group discussions with water users and farmers who are being served by bore wells; 3) touch base with different District Collectors in the project area, women groups, field-level personnel of the Irrigation Development Corporation, Ground Water Department; 4) meet with officials of Panchayat Raj; 5) conduct dialogues with different NGOs involved in the work of community organization, credit and adult literacy programs; and
6) gather first hand information on the situation of different borewells in the area.

2.12 Staffing

The team leader arrived on April 2, 1995. He was followed by another long term consultant, Ms. Victoria Pineda, Farmer Participation/Privatization and WID trainer who joined April 26. Mr M. Lodder and Mr L. Dijkhuis, hydrogeologists from BKH visited the project in April/May to start the data collection for the Nalgonda Pilot Project. Mr. Dijkhuis will be back early October to continue work on the Nalgonda pilot project. He will be on the project for 18 months.

The two long term national consultants, Dr. Jasveen Jairath, WID Expert/ Trainer and Dr. K.K. Singh, Institutional Development Specialist also joined the project in April.

The expatriate consultants with short-term and/or intermittent commitment to the project who have visited the project are the following:

- Ton Jansen, Area Manager: April 7-12: May 17-21
- Martien Lodder, Hydrogeolist: April 24-May 18
- Aske Tempelman, Project Manager: May 16-24
- Bart Van Lavieren, Environmentalist: June 5-14
- Jos de Kraker, M&E Expert: June 13-30
- Ruth Urben, WID Expert: June 13-30

Also on April 1995, the following short-term local consultants from IRDAS, Euroconsult's local counterpart have begun working with the project:

- Mr. C. Sithapathi Rao, Environment Specialist
- Dr. M. Rajagopalan, M&E & MIS Expert
- Mr. M.S. Dhillon, MQC Specialist. Mr. Dhillon had replaced Mr. D. Reddy who could not join the project for personal reasons.
- Ms. Vijaya Shyamala, Socio-Agronomist. Ms. Syamala is a replacement of Ms. B. Jaleeli who was unable to work on the project due to illness.
- Dr. Gautam Pingle, Agro-Economist
- Dr. Afzal Mohammad, GIS Expert for Nalgonda pilot project.

At the moment, APWELL project does not have any Training Coordinator. Earlier, the services of the former training coordinator hired by IRDAS, had been discontinued due to lack of training experience. Meantime, the project is searching for a qualified person as replacement.

All the required office staff have been hired. They are the following:

- Office Manager
- Assistant Office Manager (Hyderabad)
- Assistant Office Manager cum Secretary (Nalgonda)
- Computer Operator
- Secretary
- Drivers (2)
- Peon/Watchperson (3)

APPROACH AND INSTITUTIONAL ARRANGEMENTS

3 APPROACH AND INSTITUTIONAL ARRANGEMENTS

3.1 Participatory Approach

The basic approach the project will employ to achieve the above objectives is the participatory approach (Table 1). The participatory approach is predicated on the principle that " people are the central purpose of development and human will and capacity are its most critical resource." (D. Korten). Moreover, it will be a key concern of the APWELL project that the concept of people participation will not come to mean the illusion of participation, the semblance of involvement, the opportunity to speak without being heard, the receipt of token benefits and the enjoyment of stop-gap palliative measures. Rather, it will mean involvement of the target groups in the conceptualization, planning, design, implementation, operation and maintenance as well as management of infrastructures and/or programs designed to bring them benefits be they village roads, irrigation systems, credit, education, health, nutrition and others.

However, putting the principle of people participation into practice is a difficult and daunting task indeed. Here are some of the reasons why:

Bureaucratic centralized planning: Most development agencies came into being when participation was not a major theme in development thinking. These agencies where designed for more centralized service-delivery approach whereby their policies and procedures discouraged rather than encouraged participatory planning at grass roots level.

Attitudes and values: of people in authority: the poverty of the people is often considered synonymous with stupidity and ignorance; and of the poor themselves: having been the objects of development planning for so long, the poor have been rendered dependent and quite incapable of thinking for themselves.

Destruction of local organizations: Destruction of indigenous local organizations in favor of models which "experts" carry in their heads." Almost all new irrigation projects recommend some form of public institutions similar to those found in developed countries. There is very little attempt to work within existing institutions or to develop adaptations based upon indigenous social relationships." (Levine).

"Fly-by Night" Organizers: Failure of Community Organizers to integrate fully with the people and establish their credibility because of reluctance to live among the poor.

Lead Time: Absence of adequate lead time to organize the people prior to technical or construction activities

The important components of the participatory approach is *dialogue* and *listening* to the people. This means that the project implementors, i.e. the APSIDC engineers, the consultants and the people will discuss together their needs and plan and figure out ways how best to meet those needs and solve their problems. In other words, the project staff will " mine the wisdom of the people " by *listening* to what they say in order to incorporate their ideas into APWELL's program of activities. This they will do being ever mindful that in the ultimate analysis, the goal of APWELL project is to improve the quality of life of the small and marginal men and women farmers in the seven districts under the coverage of the project.

3.2 Surveys and Studies

Through surveys and studies (as in the Nalgonda pilot project), the people will combine their local knowledge with that of the multi disciplinary project staff and the NGOs on how they manage their borewells; resolve conflicts spawned by scarce water supply; rotate their crops to take advantage of favorable market price; and manage the watersheds to enhance groundwater supply. The technical, social and institutional information they share will serve as inputs in the process of crafting meaningful plans and programs.

3.3 People's Initiative

Through combined efforts, the marginal and small men and women farmers will empower themselves by building their own organizations of water users through the help of community organizers who will catalyze them into action. The water users groups will register their association; develop their own rules and procedures on water sharing; keep bank accounts; audit and record their books; attend training programs; select their own leaders; and figure out ways how to sustain their associations and engage in capital build-up.

Table 1: People participation model

Model	" The People "	Activities	Outputs
1	Planners & Technocrats	Planners & Technocrats present plans to the people for information	People's participation is nil
2	Planners & local elites i.e. local politicians, rich people, doctors, teachers and petty bureaucrats	Planners and local elites decide for the majority of the people. They think they know what is best for the majority by reason of their "exalted" position in the locality.	Majority are non-participants in the decision-making process
3	Planners and people appointed by the local elites who represent them	Planners and representatives of the local elites decide the plan for the majority	Often, only the needs and interest of the local elites are represented in the decision. The presence of a few people who represent the local elites serves to "legitimize" so called, consultation with the people
4	Planners and people randomly selected for the purpose of consultation	Planners and randomly selected people decide the plan for the majority	The different sectors of the local community are not represented in the decision
5	Planners and elected representatives of the community	Planners and elected people's representatives decide the project plan	Genuine people's participation is achieved

3.4 Focus On Women

The emphasis will be on mainstreaming women so that, equal with the men, they will not only have access to but will also have the right to be a) involved in all project activities; b) organize their own associations; c) operate and maintain their own borewells; d) benefit from credit facilities; e) have control over income and f) be fully represented in planning and decision making activities that will have a direct impact on their lives.

3.5 Institutional Arrangements

Irrigation systems which are successfully operated and maintained by farmers have two striking features. These are the following: a) strongly organized groups of farmers who are willing to assume responsibilities for operating and maintaining the system and b) supportive irrigation bureaucracies which understand and appreciate the institutional situations and are able to listen and respond to the needs of the water users in a manner that is respectful of people's opinions and desires. Experience shows that without these two important factors, no irrigation system can be sustained over time.

Combined with efforts to organize water users associations and build their capacities to manage their own affairs, the Consultant and the NGOs will develop APSIDC's internal capabilities so that it can respond meaningfully to institutional needs and issues related to irrigation and water management. Hence, from a purely engineering and technocratic agency dealing with the technical aspects of irrigation, APSIDC will be catalyzed into an entity that combines technical expertise with sound social perspective relative to water users.

The water users will be organized into strong water users groups and taught skills so that they can function effectively as groups. Moreover, in the course of organizing the water users, they will be required to contribute a minimum of 10% cost of borewell construction and one year after the installation of the borewell, they will assume complete responsibility for its operation and maintenance.

The Weakness Behind the Concept of "State-level NGOs"

According to the APWELL project document, the district level NGOs will organize the farmers into water users groups (WUGs). The NGOs will also undertake socio-economic surveys, site selection, training of water users and other non-engineering activities. These district-level NGOs will be contracted out by a **State-level NGO** which shall supervise, monitor, train and evaluate the organizing works of the district NGOs. In conjunction with these activities, APSIDC will perform the engineering tasks like well siting, drilling, yield testing, borewell installation and the laying out of the distribution system. In addition, the Ground Water Department will assess the ground water potential and define the watershed basin in the Nalgonda district in cooperation with APWELL hydrogeologists. Finally, "The Consultant" will coordinate the entire activity and provide technical assistance through both international and local experts.

The strong point behind this institutional arrangement is that it assigns the institutional (non-engineering tasks) to entities (i.e. non-government organizations) which are generally good in doing community organization-related works. The weaknesses of this arrangement however are many.

First, the NGOs involvement in organizing water users groups has severe time limitation. This means that when their contract expires, the NGOs commitment to the project will most certainly come to an end also.

Second, NGOs have their specific goals, objectives, and ideologies which generally fall under the rubric of social justice, people empowerment, gender integration, etc. And rarely does one find an NGO that is driven purely by the goal of operation and maintenance of irrigation systems.

Third, it is highly unlikely that a State-level NGO whose tasks is to hire, supervise, monitor and train district level NGOs will be able to work and function successfully with the district level NGOs from such a lofty position. Non-government organizations are generally fiercely independent and jealous of their individuality, programs and methodologies. To put a superstructure over the heads of the district level NGOs in the form of a State-level NGOs will likely be resisted by the NGOs for the simple reason that they would not like another NGO exercising control over them and over what they do.

Fourth, this arrangement does not address the need to develop the institutional capacities of the APSIDC which is what should be done in the first place in order to a) transform this purely engineering bureaucracy into a socially-oriented technical agency; b) enable it to respond meaningfully to the non-technical (i,e, complaints, suggestions, questions) needs of people at the grass roots level; and c) continue to monitor water users groups until they become self-reliant group of people who are able to operate and maintain their borewells with minimum help from government.

Development of Internal Capacities of APSIDC Instead of State-level NGO

The key therefore to the sustainability of APWELL project will depend on APSIDC's ability to address both the technical and the institutional components of the project and not on continued dependence on NGOs. In order to develop APSIDC's capacities, the following approach has been adopted: a) APSIDC will be directly exposed to the NGOs organizing activities; b) it will be trained on the institutional aspects of irrigation management, group dynamics, conduct of social surveys, Participatory Rural Appraisal and others; and c) it will be induced to hire social scientists who will work closely with APSIDC's technical staff.

3.6 Project Review, Evaluation and Coordination Mechanisms

Village Level

Coordination with the Gram Panchayat officials should be done by the COs and APSIDC field staff in order to get their support and cooperation. Attendance in Gram Panchayat meetings maybe needed from time to time.

District Level

a. A monthly coordination meeting at the office of the EE should be held in order to: assess status of work at the project areas (both the technical and non-technical activities); surface issues/ problems encountered and identify courses of action to take; and to plan activities for the following month. This should be chaired by the EE and attended by the District Field Coordinator (as the Vice Chairman cum Secretary), NGO representatives, DEE, AEEs, AEs, the COs and the Process Documentors (PDs). The schedule and agenda of this meeting will be arranged jointly by the EE and the DFC in consultation with the NGO representatives.

b. Quarterly meetings of the District Advisory Committee will be initiated to review and facilitate coordination among agencies/institutions involved in the Project. The DAC is functionally linked-up to the State Level Steering Committee.

c. Reporting of the status of APWELL implementation and presentation of project issues and needs by the DFC and the EE-APSIDC at the regular meeting of the **District Irrigation Development Board (DIDB).**

State level

a. Quarterly meetings will be set-up for the Working Committee. Minutes of the meetings of this committee will be forwarded to the Advisory Committee for their review and perusal.

b. The State Level Advisory Committee will meet on a semi-annual or annual basis depending on the situation and needs of the Project.

c. The Women's Discussion Group will meet from time to time as the need arises.

Process Documentation

Process Documentation is a useful tool in surfacing and analyzing the issues, lessons and insights gained during project implementation. It entails close documentation of the activities and processes involved in the implementation of the Project at the field level in order to record the following: processes involved in each key activity conducted; important issues encountered; roles performed by people involved ; strengths and weaknesses in implementation; and the lessons gained in the process.

Process Documentors (PDs) need to be hired and trained to undertake this. A qualified NGO has been selected to undertake this activity for the first year of the pilot implementation. The PDs will be under the direct supervision and guidance of the NGO in close collaboration with the DFC.

3.7 Role of NGOs

The major responsibilities of NGOs who are contracted by the TA for the institutional component of the Project are the following:

a. Hire qualified COs and PDs for the Project;
b. Assist the TA/Consultant in developing and conducting the CO Pre-deployment Training Module;
c. Provide feedback and suggestions to the TA/Consultant for improvement/further development of APWELL concept, approach and methodology;
d. Undertake process documentation work;
e. Directly supervise and guide COs and PDs activities;
f. Work closely with the DFC and update him/her on field situation at various sites;
g. Collate monthly accomplishment report and workplan of COs and submit to DFC with a copy to EE of APSIDC;
h. Edit PDs' monthly documentation reports and submit to DFC with a copy to EE of APSIDC;
i. Attend monthly coordination meeting at the office of the EE-APSIDC together with the COs and PDs; and
j. Attend monthly coordination meetings at the APSIDC office and quarterly DAC meetings.

Other NGOs will be tapped to undertake other tasks for the Project such as:

a. Assist in the site selection and prioritization process;
b. Establish data base and conduct of relevant baseline studies in the sites selected;
c. Assist in the development and conduct of relevant trainings for men and women farmers in the sites selected; and
d. Assist in establishing linkage and coordination with other service agencies/institutions in the project to address financial/ economic, agriculture related needs of the WUGs/WUAs/WUCs.

ORGANIZATION OF THE PROJECT

4 ORGANIZATION OF THE PROJECT (Annex 3: Organorgram)

The project will be executed under the responsibility of the Andhra Pradesh State Irrigation Development Authority and Euroconsult together with BKH and IRDAS as Consultant.

The Executive Authorities are the Andhra Pradesh Ministry of Irrigation and the Netherlands government's Directorate for International Cooperation of the Ministry of Foreign Affairs.

The lead implementing agency for the project is the Andhra Pradesh State Irrigation Development Corporation (APSIDC). At the State Level, the Chief Engineer for Lift Irrigation Schemes has been appointed as the Liason Officer for APWELL. He is supported by two Executive Engineers at the Registered Office. The Executive Engineers (EEs) at the district level will spearhead project implementation in the project districts and will be supported by the Deputy Executive Engineers (Dy. EEs) at the sub-division level.

4.1 State Level Coordination

The Consultant in coordination with APSIDC will be responsible for coordinating the activities of NGOs contracted for the project. The contracting processes with these NGOs will also be the direct responsibility of the Consultant through the Team Leader. This arrangement will motivate APSIDC to attend not only to the technical component of the Project but also to its social and institutional components.

4.2 District Field Coordinator

The project needs to create a position at the district level which will be responsible in overseeing project implementation, guiding and coordinating the work of the NGOs and closely coordinate with the APSIDC and other relevant agencies/institutions at the district level to facilitate implementation of support mecahnisms for the project. The proposed position is for a **District Field Coordinator (DFC)**. The DFC will be based at the office of the Executive Engineer of APSIDC at the district level in order to facilitate coordination of technical, institutional and social components of the project. He/she will be part of the local consultant of the Project and will be hired through IRDAS. Specifically, the DFC will be responsible for:

a. Providing close supervision and guidance to the NGOs regarding the APWELL concept, approach and methodology;

b. Closely collaborate with the NGOs concerned in the identification of training needs of the potential water users;

c. Regularly get feedback from NGOs on the status of field activities, COs work and get suggestions for improvement/further development of APWELL methodology;

d. Coordinate closely with the APSIDC Staff at the District Level and discuss wit the Executive Engineer (EE) progress of the social, institutional and technical components of the project and issues/needs encountered;

e. Collate and submit NGOs' accomplishment reports to the Project Team Leader with a copy to the EE of APSIDC;

f. Forward to Project Team Leader the monthly process documentation report by the PDs;

g. Coordinate with other relevant agencies/institutions in the district and facilitate linkage of APWELL activities with their activities/programs when needed;

h. Oversee status of project implementation at the district and field levels;

i. Coordinate/collaborate with the DFCs of other districts: and

j. Prepare and submit quarterly progress reports for all borewell schemes in the district in coordination with the EE with copy to the District Collector and submit these to the Project Team Leader with copy to the C.E. APSIDC (APWELL Liason Officer)

4.3 Community Organizers

Community Organizers (COs) will be hired through qualified NGOs and will be deployed to the project area after undergoing a pre-deployment training to be conducted jointly by the Consultant, APSIDC and the NGOs who hired them. The success of building viable group-managed borewells depends to a great extent on the capability and efficiency of the COs.

Area Coverage

The area coverage for one CO initially shall be 5-10 potential borewell groups provided these are contiguous to each other or are within a village and that the number of potential men and women water users in these groups should not exceed **150**. Once the COs gain more skills and confidence, the number of borewell groups can be increased to 10-20 groups per CO depending on the location of these groups (within a village or within 2 or 3 neighboring villages).

Job Description

The following is a job description for the CO:

a. Catalyze men and women farmers' awareness on the potential benefits of getting themselves organized in a cohesive and functional organization ;

b. Closely assist small and marginal men and women farmers covered by proposed borewell schemes to form Water Users' Groups and WUAs;

c. Assist the men and women farmers to analyze their resources, set objectives, select leaders, establish viable WUGs, raise their own resources, keep records, monitor and evaluate progress, and productively re-invest their profits;

d. Coordinate with the APSIDC engineers to facilitate men and women farmers' involvement in all phases of borewell development;

e. Facilitate capability development programme for the WUGs and WUAs on leadership, financial management, operation and maintenance, water management, agronomic practices, etc.

f. Critically monitor and evaluate the progress and status of WUGs and WUAs;

g. Participate in APWELL coordination and review meetings/workshops;

h. Provide feedback and suggestions for improvement/further development of the APWELL community organization program; and

i. Prepare monthly workplan and accomplishment report in consultation with the APSIDC field staff/Assistant Engineers which will be submitted to the NGO with a copy to the DFC.

Supervision of COs

The NGOs contracted for the institutional work will be responsible in supervising cand guiding the activities of the COs at the project sites in close coordination with the APSIDC staff and DFC.

4.4 Advisory Groups/Committees

In view of the various components of the project, it is imperative to link the project with other programs of the government and private institutions. It is also important to involve experts outside the project team to objectively review and analyze progress of project implementation specially in the pilot phase in order to surface issues, lessons and insights that would help improve and further develop the project concept, approach and methodology in order to attain its goals and objectives. These need the creation of advisory groups/committees at the State and District Levels:

A. State Level

1. Advisory Committee

As mentioned in the technical proposal and project document, an Advisory Committee will be created which will be responsible for coordination between Government Departments involved in the Project and for long term policy matters. Its composition will be as stipulated in the project document.

2. Working Committee

Apart from the Advisory Committee at this level, there is a need to create a **Working Committee** which will be responsible in closely overseeing, monitoring and evaluating progress of project implementation. The members of this committee will be the following: TA Team Leader and long term consultants, Chief Engineer of APSIDC (APWELL liason officer), Chairman or Managing Director of APSIDC, Director of GWD, APSEB Chairman, Gender/WID Specialist (selected by the Consultant and APSIDC), other heads of relevant agencies/institutions e.g. DRDA, DA, NIRD/SIRD. This committee will meet on a quarterly basis and will be chaired by the Secretary of Irrigation (initially) with the APSIDC Chief Engineer as Vice Chairman and the TA Team Leader as Secretary. This committee will also be responsible in updating the Advisory Committee on progress of the project and issues that need its attention. Minutes of the meetings of the Coordinating Committee will be forwarded to the Advisory Committee for their review.

3. Women's Discussion Group (WDG)

One of the major objectives of the Project is to provide women equal access to and involvement in the project with men. As such, the project will be adopting a Gender Integrated Development (GID) approach in order to attain this objective. In Andra Pradesh, there is rich experience in implementing gender related and WID programs and valuable lessons and insights have been gained in the process. The APWELL project can benefit much from this experience. One meaningful way of tapping this rich experience and use them in the Project is through the creation of a **Women's Discussion Group** consisting of the TA-GID/WID Expert and selected women who have been involved directly/indirectly in the various women's programs in the state. The WDG will be convened by the TA Team Leader through the Gender Integrated Development (GID) Expert. This group will meet when there are critical issues faced by the project relative to its gender/WID component.

B. District Level

A **District Advisory Committee (DAC)** is proposed to be formed that will be responsible in reviewing progress of the Project, advise on issues/needs encountered, facilitate coordination among agencies involved in the project and coordinate various agencies' inputs in the Project. The DAC will be chaired by the District Collector or his designated representative and will have as members the following: DFC and/or any of the long term consultants assigned by the Team Leader; EE of APSIDC (Secretary); EEs of GWD and APSEB; representatives of other relevant agencies/institutions (GO and NGO). The DAC will meet on a quarterly basis and will submit minutes of its meetings to the State Level Steering Committee through the Working Committee. The EE of APSIDC being the secretary of the DAC will be responsible for the preparation of the minutes of the DAC's meetings.

C. Village and Water Users' Level

At this stage it is difficult to determine proper and effective organizational units and institutional arrangements that will be required by the project at the water users' and village level. This will require more field exposure and experience in implementing the project. At the end of the pilot phase, it is expected that appropriate institutional mechanisms/ arrangements and organization would have been determined. The following will be the initial institutional arrangements and mechanisms at the village and water users' level:

1. The project field level staff must coordinate very closely with the Sarpanch and other Gram Panchayat officials the project activities to be undertaken with the potential water users. They should be made aware of these in order to get their support and cooperation.

2. At the water users' level, the potential men and women water users at the proposed borewell sites will be assisted to get organized into **Water Users' Groups (WUGs)**. This represents the lowest tier of the Water Users' Organization (WUO). Potential water users of one borewell will represent one WUG which will be involved in the planning, design, construction and eventually management of the borewell. A WUG may cover 3-6 farm households or about 6 to 12 members (2 per household: Husband/son and wife/ daughter).

Based on the project document and technical proposal, the WUO will consist of 4 tiers: 1) WUG; 2) WUA; 3) WUC; and 4) Apex Body. At this stage, the organizational basis and objectives for each tier above the WUG will be determined based on field conditions and needs during the pilot phase. The process of determining the basis and objectives on the formation of the WUO tiers beyond the WUG level will be done with the water users--their views and decision on this must be sought.

3. Linkage of the organized WUGs with other institutions/ agencies and groups is an important component of the project. Power supply, and groundwater management are some of the important aspects which should be addressed by the project. These issues need a strong and effective linkage and coordination mechanisms among various water users' groups and institutions within the village and/or watershed area which should be facilitated by the Project.

PLAN OF ACTION

5 PLAN OF ACTION

The project team and APSIDC have agreed that for the first year, 2 districts will be covered, namely: Mahbubnagar and Kurnool. In each district, one village will be taken-up consisting of 3-5 clusters. A cluster is an area covering about 50 to 200 acres where groundwater potential is high and recharging is good. About 5 to 10 borewells can be installed in 1 cluster. 50 borewells are scheduled to be undertaken during the first year of the project.

In the second year, another district will be covered which is Anantapur. It was agreed that for the first half of this year, 130 borewells will be taken-up covering about 5 to 7 villages. The last half of the 2nd year will cover an additional 200 borewells proposed to be taken up under the 3 districts.

It is also planned that revitalization of "sick" borewells will also be done during the pilot phase in the 3 districts. A total of 50 "sick" borewells are proposed to be revitalized during this phase.

Annex 1 shows the phasing of borewells for the project.

For the pilot phase implementation of the project, a process has been evolved to be tested and implemented in the pilot sites (see Annex 4). The process involves 5 phases, namely: 1)preliminary studies and site selection phase; 2) WUG formation and planning phase; 3) construction and WUG reorganization and strengthening phase; 4) O&M transition phase; and 5) WUG borewell management phase. Adjustment and finetuning of this process will be done at the end of the pilot phase and will be replicated in the other districts over the next 3 years of the project.

The project's action plan revolves mainly around this process. Below is a brief description of this process.

5.1 Institutional and Technical (Construction)

The implementation plan of activities to achieve the institutional and technical (i.e. construction) goals during the pilot period is divided into five phases. These are: 1) Phase 1: Preliminary studies and site selection; 2) Phase 2: Water users group formation and planning; 3) Phase 3: construction and WUG reorganization and strengthening; 4) Phase 4: Operation and Maintenance transition; and 5) Phase 5: Operation and Maintenance (management).

5.1.1 Phase 1: Preliminary Studies and Site Selection Phase

(Annex 5: Site Selection Criteria)

There are five sets of key activities under phase 1. These are the following:

1) Data Gathering: Gender, social, environmental and hydrology-related information that are relevant to the project will be gathered. The main purpose of this exercise is to make the project team better informed of the actual situation on the ground so that it can evolve a more realistic plan of action.

2) Site Selection and Prioritization: The site selection and prioritazation criteria that will be used by the project are the following:

a) Groundwater and Re-charge Potential:

- groundwater availability must be at least highly probable if not certain. This judgment must be based on sound hydrogeological studies, consultation with the local people and on information from remote sensing technology when available.
- micro-catchments in which no or little groundwater development has been done so far;
- micro-catchments with good potential for artificial recharge through watershed management in micro-catchments; and
- micro-catchments in which farmers and/or GOs/NGOs have started watershed management activities. (MER Commission Report, July 1995, p.9)

b) Electricity:

- commitment of Andhra Pradesh Electricity Board to energize the wells within six months after installation.
- willingness of WUGs to purchase own transformers.

c) Target Groups:

- owners of borewells must be small, marginal men and women farmers and/or women headed households;
- land holding belong to different individuals.

d) Social and Institutional:

- people accept concept of the project and idea of people participation;
- long history of community cooperation and absence of communal discord;
- willingness of target groups to organize and contribute 10-20% cost of borewell construction;
- community has strong leadership potential;

e) Soil:

- i.e. not rocky, saline and no occurrence of usar.

The site selection and prioritization process involves 3 stages, namely: 1) identification of the potential zones; 2) in-depth study of the technical, social, gender and environmental aspects of the potential zones identified; and 3) identification of potential clusters for borewell development and prioritization of these clusters for implementation. It is the major concern of this project that sites selected will not adversely affect the existing groundwater use and that the project will not in any way contribute to the further depletion of the groundwater resource.

3) Recruitment of NGOs and Training of COs and Process Documenters: After the sites have been selected, APWELL will contract out the NGOs that will do the organizing and process documentation work. This will be followed by the training of COs and process documenters. Training will be done jointly by the NGOs and the Consultant. Similarly, the Consultant will give orientation seminar to APSIDC engineers on group dynamics, participatory approach and CO method. This will be attended by the Chief Engineer, Executive Engineers and Assistant Executive Engineers of APSIDC.

5.1.2 Phase 2: Water Users' Group Formation and Planning

1) Entry into Community and Immersion: After the COs have been trained on CO method, they will be posted to the selected sites where they will integrate or immerse themselves into the community so that eventually they would be accepted by the local people " as one of them." The process of integration is a continuous process. During the process of integration, the COs will conduct baseline surveys in order to learn about the community- its history, culture, quality of life of the people, power structure of the community, who the leaders are, their sources of livelihood, irrigation systems, etc. All these knowledge will augment their previous knowledge of the community which they ought to have learned from studies done earlier by the project like the " Studies on 'Sick' Borewells" and on " Group Managed Borewells". Acceptance by the people is very important because it would enhance their success in organizing the local people.

2) Tentative Program: Based on their knowledge of the people and on information which the COs had gathered in the process of immersion with the communities, they will formulate tentative plan of action on how to organize them.

3) Groundwork: After completing the tentative program, the COs will meet (groundwork) the people individually to motivate them to participate actively in the project. They will also identify some "contact persons" in the community who can be tapped and developed to assist the COS in motivating and "groundworking" other water users. During "groundworking" the COs and contact persons will explain to the target water men and women water users the objectives of the project, its requirements like the need to be organized, the required ten or more percent equity, and the need to undergo training. They will also arrange small group meetings wherein the objectives, conditions, requirements of the project and the people's suggestion will be discussed. Both in individual as well as group meetings, women will be active participants.

4) Planning Sessions/Meetings: When sufficient awareness of the project has been generated, the contact persons will arrange meetings of potential water users to plan future activities. Prior to the meetings, however, the contact persons and the COs will prepare the agenda. One of the important agenda during these meetings is the decision of the water users on the composition of the organization e.g. 2 members per household (husband and wife/daughter). Sometimes, separate meetings of men and women will be arranged to give both groups the freedom to talk more candidly. Meetings are an important vehicle to express people's opinions and grievances. They also give a sense of collective power and a growing sense of confidence and feeling that they are not alone and that together, they have the power to accomplish things.

5) Listing of Potential Water Users: Three important activities fall under this heading. These are a) listing of potential water users with basic information about size of lands, tenurial status, addresses, caste, etc.; b) filing of application for borewells; and c) village mapping to locate farms of potential water users. All these activities will be undertaken by the men and women farmers who are the potential borewell users. At this stage, potential water users are organized into temporary WUGs. The WUGs will be firmed up later on when the existence of groundwater is ascertained.

6) APSIDC Conducts Geophysical Survey: The potential men and women water users will assist APSIDC during the survey by clearing paths and giving information about local conditions, etc.

7) Identification of Drilling Points: Alongside this activity, the COs will help potential water users determine various modalities of their participation. At the same time, potential women water users will attend training on Assertiveness and Communication.

8) APSIDC Trains Potential Water Users on Borewell Technology and Management: This training will cover a wide variety of topics and issues such as identification of borewell location; technical parts of pumps, engines, etc; construction of distribution channels; drilling and installation techniques; costs, and quality control.

9) Mobilization of WUG Members and/or Potential Men and Women Water Users for Planning and Design of Borewell: This involves the following activities:

- discussion between water users and APSIDC on plans and designs of borewells including costs of construction;
- discussion about equity participation and detailed plans re: people's participation during construction;
- discussion on loan assistance and capital build-up.

At this stage, the actual integration of the social and technical components takes place. It is expected that during this phase, closer interaction between the WUG and APSIDC staff will happen since this interaction is so important for better cooperation during the construction phase.

5.1.3 Phase 3: Construction and WUG Reorganization and Strengthening

1) Drilling of Points: WUG and potential water users participate in the drilling activities. They determine together with APSIDC the ayacut of successful wells, decide on the types of pumps to be purchased and layout of field channels.

2) Selection, Ordering and Delivery of Pumpset: The WUG should be involved in the decision-making with regard to the brand of pumpset to be installed.

3) Pump Installation and Testing: To be participated in by the men and women members of the WUG and APSIDC staff.

4) Laying out of PVC Pipes and Construction of Field Channels: To be done by WUG and APSIDC staff.

5) Application, Installation of Power Supply/Energization: WUGs must be mobilized to have close interaction and dialogue with the ABSEB staff on this activity.

6) Firming up of the WUG and formulation of Rules & Procedures: This is done when drilling proves successful.

5.1.4 Phase 4: O&M Transition

1) Finalization of Terms & Conditions for Turn Over of Borewells: APSIDC and the WUG discuss and agree on conditions for the handing over of borewells to the WUGs. The WUG also formulate plans for O&M, scheme of water distribution, cropping pattern and others.

2) Turn-over of Borewells to WUG: In order to ensure successful operation and maintenance of borewells by the members of the WUGs, water users will be trained on operation and maintenance procedures, water management, crop production and on environment-related issues.

5.1.5 Borewell Management

1) Implementation of O&M Plan: In the course of implementing operation and maintenance plan, the water users will also engage in related activities like improved cropping practice and capital fund build-up for O&M.

2) Federation of WUGs into Water Users' Associations.

3) Phase out of Community Organizers.

5.2 Gender

The focus of women oriented activity will be on redressing the imbalance in gender relations. This means that women empowerment will be considered an integral and not an optional component of the project. For these reasons, it is suggested that the " WID " nomenclature within the project is replaced by GID or Gender Integrated Development.

The starting point for gender-related interventions would be the target population itself. Enlisting their involvement at every stage of the project, as per their sanction and consensus will be the underlying principle of this methodology. To make a deliberate and conscious effort to bring women to the fore-front of decision making at every stage/step of the project would be attempted.

However, it is recognized that the process of mainstreaming women will not be an easy one given the long history of subordination and passive acceptance of their fate as "second class citizens of the world." Notwithstanding expected difficulties, APWELL will pursue the goal of gender integration through the following activities:

1) Training: Training has been identified as a key part of the institutional,communication and technical development of project staff and farmers. A number of GID related training modules have been designated to sensitize the women to gender issues and to increase their confidence and ability to speak in public. Both are training topics that the GID program has identified as necessary for WUG women members. Planning, preparation and management of training and also the planning and preparation of visual aids are areas that will require a substantial time investment and resource support.

The training methodology will be interactive and use the visual medium which enables the farmers to conceptualize, assess and decide on options, or combination of options, best suited to their resources, and aspirations. Other conventional and less conventional visual mobilizing / training / extension aids are also likely to be required: for example posters or the use of development drama and songs to create awareness and mobilize villages; or the use of radio and television targeted on women.

The availability of suitable existing visual aids needs to be assessed. For these topics for which none are available, visual aids must be designed and produced. The proposed APWELL targets justify the production of professional and durable media for re-use throughout the project area, rather than relying solely on production by the local NGOs.

2) Affirmative Action: In favor of women farmers to make it attractive for them to overcome their traditional segregation and confinement to limited sphere of productive and reproductive activity.

3) Capacity Building: Activities which may not be directly connected with the project but constitute a pre-requisite for GID as they aim to create a greater confidence and awareness among women of target population. That is to make these women more conscious of their latent capabilities to have a greater control over their lives and then to ignite the spark of optimism and hope. This is critically important to overcome the inertia generated by the resigned acceptance and rationalization of status typically observed among women of such communities. These barriers we likely to prevent APWELL from achieving its goal of equal and active participation by men and women in water user organizations, unless APWELL undertakes specific women-focused capacity building activities to over come them. These would be the foremost building blocks of eventual empowerment of women, which is the major goal of the project.

Examples of such activities would be communication or assertiveness skill development for women, study tours,workshops, women's conventions, etc. to expose WUG women to rural women activists and to the achievements of women in other villages, districts or states; etc.

4) Gender Sensitization: Activity through workshops, informal discussion, drama and song sessions etc. This activity needs to be focussed not only on the women but on the whole community. The attempt is to bring out the gender biases inherent in the "mainstream" and "normal" life of the community at both practical and ideological level. These biases are taken for granted as the "norm" without generating their validity. The role of gender sensitive activity is to make the community conscious and aware about the asymmetry in gender relations by provoking them to think about it and not take it for granted.

5) Integration: Co-operation and networking will be a feature of the GID program to increase its effectiveness. Examples are the proposed Women's Discussion Group and the intention to use APWELL women's organization as a magnet to draw down support from other development programs, such as DWCRA, ANTWA, ICWD etc. An emphasis on co-operation is consistent with the approach of the Royal Netherlands Embassy, which aims for synergy by concentrating its multi-sectoral WID efforts in limited geographical areas.

6) Women's Discussion Group: A pool of highly experienced women's development workers in Andhra Pradesh and Hyderabad has been identified. These are a valuable resource for the project and the GID program. It is suggested that an *ad hoc* Women's Discussion Group be established, to meet as and when required. It will act as a forum for creative discussion of APWELL GID issues. A budget will be allocated to provide modest honorarium to the members of the group.

5.3 Environment

The main environmental issues related to APWELL project can be classified into three groups. They are the following: 1) Water quantity (availability and sustainable use of ground water); 2) Water quality; 3) Agro-chemical residue contaminations; and 4) Impacts on biotic communities. There will be no sizeable impact on soils.

5.3.1. Water Quantity

The project team shares the opinion of the MER (Commission for Environmental Impact Assessment, the Netherlands) report that borewell selection should be linked to groundwater availabilty. In particular, the linkage with catchment rehabilitation, the "Watershed Management" approach is fully appreciated.

A large number of watershed management activities have already been initiated by various government agencies under the following programmes:

1. Drought Prone Area Programme (DPAP) by District Rural Development Agency (DRDA)
2. National Watershed Development in Rainfed Areas
3. Tribal Development Program
4. Watershed Development Schemes under Pancahyat Raj
5. Soil Conservation Programmes
6. Afforestation/Watershed Development by Forest Department
7. Wasteland Development Schemes
8. Minor Irrigation Development Schemes

Each of the above programmes has its own set of priorities and procedures for watershed development. DPAP has the major share of the funding for watershed development. GOI has issued revised guidelines on implementing watershed development activities for adoption starting April 1995. Under this policy, the village will be the unit for taking-up watershed program. A watershed of about 500 hectares is to be earmarked for the program. There will be one "Watershed Association" (WA) at the village level for all watersheds. The Panchayati Samithi will take over this function. For each watershed, there will be a "Watershed Committee" with 10-12 members. The WA will appoint one full time "Watershed Secretary" and 3 "watershed volunteers" for each watershed.

Since there alreadly exists a structure/organization for watershed development activities as described in the GOI policy above, APWELL does not have to initiate its own process for this but rather link-up the water users' groups and WUAs with the watershed organization. This will be done only in areas where watershed activities are going-on. The presence of a watershed management plan will be a criterion for site selection. The Pilot Phase, no APWELL activities will take place in areas where no watershed programme is being implemented. This approach will be reviewed during the Mid-term evaluation.

Measures required to guarantee sustainable use of groundwater as recommended in the MER report are included in the criteria for borewell site selection, see Section 5.1.1 and Annex B. Sustainability of the use of groundwater will be further enhanced through farmers' training and extension programmes. The fields of intervention that will be taken up by the project include the following.

- stimulating appropriate cropping patterns, based on availabilty of groundwater and annual fluctuations in groundwater recharge; promoting ID-crops instead of paddy, checking and adjusting the size of the irrigation plots;

- training and demonstration in effective water use, avoidance of leakage, seepage nad spillage losses and excessive pumping; promoting cooperation amongst farmers throuhg the establishment of water users' groups;

- as recommended in the MER report improve irrigation efficiency through promoting such water saving measures as the application of canal lining, PVC pipelines, drip irrigation and land levelling. The decision to invest will be left with the farmers;

- awareness creation programmes among farmers' communities and authorities focussing on on sustainable use of grounwater; involvement of women in water management;

- institutional strengthening of agencies responsible for groundwater and irrigation development. There is need for new legislation and enforcement structures for the construcion of private borewells. The State Government has drafted a Goundwater Act, defining, inter alia, required minimum spacing of deep borewells. It is not clear, however, to what extent enforcement of these regulations will be effective.

5.3.2 Water Quality

Ground water quality of each borewell is routinely tested. Standards presently applied for irrigation water are adequate. In cases borewell water is also used for domestic purposes, Drinking Water Quality Standards will be applied.

Areas with high fluoride contents should will not be considered for borewell development. Sites where the ground water contains high levels of dissolved salts, indicating salinization risks, will not be considered for borewell development. Standard procedures in this respect are already followed by the ID to avoid salinization risks.

The project will for each cluster of borewells design a system for adequate disposal of contaminated drainage water, in order to avoid conflicts and pollution in downstream areas. There will be sample tests of the water from wells (see Chapter 6).

5.3.3 Agro-chemical Residue Contamination

In general, target farmers have little cash to purchase chemical fertilizers and pesticides. The relatively high costs of these products and low income levels of target farmers are the main reasons for this.

Data on present use of fertilizers will be collected and trends in fertilizer application will be monitored. A sample survey will be carried out on the prevailing crop pests- and diseases, and on present levels and types of pesticide use, see Chapter 6.

It is noticed that there is a lack of information and knowledge among farmers on safe handling and use of pesticides. The project will include such instructions in farmers' training and demonstration sessions. In cooperation with agriculture extension services, a special programme on safe handling and use of the pesticides commonly available on the market will be worked out. The preparation of a simple, well-illustrated farmers' manual is being considered. The training and demonstration packages will also include suitable practices in Integrated Pest Management (IPM). An inventory of farmers' experience in "traditional" crop pest and disease control, and ongoing IPM-programmes will be made.

Testing of water samples for pesticide residues is included in the monitoring programme.

5.3.4 Encroachment on Forest Lands and Loss of Grazing Lands

Conflicts of this nature may arise at certain sites. In some case, it is expected that solutions can be worked out in consultation with communities involved, or in coordination with the district forestry staff. In case where such conflicting issues are difficult to resolve, the selection of the site will be reconsidered.

At Appaipally village, adjacent to the proposed project site, the largest (3,565 km^2) Wildlife Sanctuary in India exists. Plans exist to classify the area as a National Park. Site selection for borewells in this area will be such that the integrity of the sanctuary and its flora and fauna resources will be protected. To keep sufficient distance from the sanctuary will also be in the interest of farmers, as too close proximity of croplands will invite crop-raiding wildlife and invasions of other animals capable of inflicting serious crop damage.

5.4 Training

Training is an integral part of the APWELL Project. It is part and parcel of the capacity building program for the APSIDC staff, target men and women water users, and the NGOs to be involved. It is a process that should evolve from the needs of the program implementors and target groups at various stages of the project implementation.

Planning, preparation and management of the APWELL training programme will require substantial time investment not to mention fund resources. Though the project will have a Training Coordinator, the limited time input, coupled with the diversity and bulk of training needs, means that the project will need to tap external training resources.

The implementation of the APWELL Training Programme will be done in stages and will follow the following steps.

1. **Identification of Training Needs**

A Training Needs Questionnaire (TNQ) will be administered by the Training Coordinator (TC) to the: a) APSIDC Staff (both at the headquarters, division and subdivision levels); b) Project staff specifically the District Field Coordinators and M&E staff; c) NGOs specifically the Community Organizers and Process Documentors; and d) target water users (men and women).

The TNQ aims at identifying specific knowledge and skills that the various program implementors must acquire at each stage of the project implementation focusing on: a)water users' organization and participation; b) borewell planning, construction and O&M; c) groundwater use and management; d) gender aspect; e) environmental aspect; and f) profitable agriculture production.

2. **Creation of District Training Unit** (DTU)

Considering the bulk of trainings that will be implemented at various levels specifically at the water users' level, there is a need to form and train people at the district level to conduct trainings for the water users. The DTU will be composed of the District Field Coordinator, selected staff (at least 2) from APSIDC at the division level, representatives from NGOs who have been contracted to do the organizing and institutional work, and the Community Organizers who will be involved in trainings to be conducted in their respective areas of assignments. The TC will guide and supervise the DTU.

3. **Conduct of Trainors' Training**

The DTU will be given a Trainors' Training by the core of trainors of the APWELL composed of the TC, FPPS/WID/ Trainer and GID Expert with assistance from the Team Leader and other experts in the project. Training institutes like the National Institute on Rural Development (NIRD), MANAGE and WALAMTARI will be tapped to help in this Trainors' Training Program.

4. **APWELL Training Programmes**

Annex 6 presents a list of training topics that may surface as training needs by the project implementors at various levels. Some of these topics will be merged together under one training program in order to maximize use of available training funds. The people to be trained, who will train and the schedule for the conduct of these training topics are also presented.

5. **Development of Training Modules and Materials and Implementation of the APWELL Training Programme**

Based on the analysis of the training needs identified, specific training modules and materials will be formulated by the core Training Module Specialist. Assistance from NGO and GO institutions will be sought on this aspect.

Training programs for the APSIDC personnel and NGOs will be handled by the core of trainors at Hyderabad while those at the water users' level will be conducted by the DTUs with assistance from the TC and other members of the core of trainors.

APWELL training programs will be undertaken in various forms: a) classroom or formal sessions, b) using the local cultural medium such as theater, music, etc.; c) tutorial sessions; and d) study tours.

MONITORING AND EVALUATION

6 MONITORING AND EVALUATION

6.1 Process Documentation

In Chapter 5, the process of borewell development and management is described. Process documentation will be used to monitor this process. Process documentation (PD) is a non-judgmental and non-evaluative recording of information about key and important events that take place in a project. Examples of these are meetings of farmers to discuss important irrigation issues; dialogues with irrigation bureaucrats; mobilization of people to pressure the government to help repair their borewells, etc. What Process Documentation does precisely is that it provides an action agency which seeks to adopt a new type of intervention continuous information about activities in a project and the problems and issues emerging from field activities. This information becomes a major source for determining the field implementation methods of the new intervention strategy as well as the changes that need to be made in the agency policies and procedures in order that the agency's broader program will become more effective. Thus, process documentation serves as an input into the process of reorienting an action agency to a new mode of working with its clients.

Process documentation is done by a Process Documenter. The Process Documenter uses the anthropological method called, "participant observation" and "unstructured" interviewing. Every month, the process documentation will be reviewed by the working committee organized by the project. Issues, needs and problems that are identified by the documents are discussed by the committee and appropriate actions are taken to address them accordingly.

In APWELL project, process documentation will be done by a NGO. The process documentation will be focused on several clusters of borewells in one or two villages. The process documentation phase will cover the whole two year period of the pilot project. The lessons learned from the pilot projects will be replicated over the other districts of the project area beginning from the third year of the project.

6.2 Monitoring and Evaluation

M&E activities pertain to project implementation and effect/impact evaluation. They are an integral part of the project and where possible will be carried out by project staff. Coordination and analysis will be the responsibility of the national M&E specialist; data collection in the field will be primarily carried out by the proposed process documentors and COs.

6.2.1 Project Implementation

This includes the recording and analysis of physical progress in project implementation, i.e. of inputs and outputs. Most data will have to be provided by the various organizations involved in project implementation. These include the APSIDC, the APSEB and NGOs. The project will develop an appropriate project administration/MIS system for storage and retrieval; the information to be provided has alraedy been identified.

6.2.2 Socio-economic Impact

Two groups of major M&E activities will be undertaken. First, one-time baseline surveys will be held to provide a base for monitoring changes in critical parameters and to assess project impacts. Second, regular surveys will be held to canvas changes, identify remidial action if necessary and assess impact.

During the pilot phase the data for the baseline survey will be collected for all the farmers participating in the borewell programmme of the Project. When the number of borewells increases, in the third, fourth and fifth year of the project a suitable stratified random sample design will be used for data collection. For some items of study data from secondary sources will also be used. Monitoring surveys will be conducted on a sample basis for each agricultural season, i.e. twice yearly; an appropriate sample size has yet to be determined.

The following key parameters will be monitored:

- Sources of income and items of expenditure, assets, and employment generation;
- Shifts in land utilization, water use and, cropping pattern and water conservation measures;
- Power supply and technical problems and their impact on borewell operations, quality of user supervision on the electrical system,the cost and frequency of repairs and the cumulative impact of technical and power failures on farm operations.
- Role of governmental agencies such as APSIDC, APSEB, Rural Extension, Credit, and Local Government Institutions;
- Impact on women, children and the elderly in terms of quality of life such as better health, education, housing and income;
- Changes in the work profile of farm women in terms of work-load, working pattern,decision making in farm operations, access to credit and market facilities;
- Qualitative improvement in the working relationship between the involved governmental agencies and the farmers in the operation and management of borewells.

In addition the following issues will be highlighted:

- Technical and participatory aspects of borewell installation and management such as in planning, construction and O&M phase.
- Contribution of participatory approach in operational efficiency of borewells in terms of use of power, money and other services.
- Growth in confidence and capability of farmers to engage in more profitable cropping systems related to the availability of water.
- Assessment of NGOs, training programs, the methods of organizing WUGs and other interventions.

6.2.3 Environmental Impact

Groundwater Re-charge

Both the AP Ground Water Department (GWD) and the Central Ground Water Board (CGWB) are involved in groundwater monitoring in the State. The GWD is responsible for groundwater monitoring at district level. Observation wells cover on average some ten square km each. Annually, pre- and post-monsoon information is collected on groundwater levels and water quality. The GWD has also organized an observation well monitoring programme through local teachers wich aims at recording groundwater level on a weekly basis. Also the (CGWB) is dealing with a groundwater monitoring in AP. The Board has started a World Bank project to establish 700 borewells in AP for monitoring deep aquifers. For instance, in the Nalgonda District, CGWB has selected eleven sites for borewells which will be equipped with automatic level recorders. When such monitoring network is installed and becomes operational, essential data required for sustainable ground water exploitation will become available.

The Project will not drill or monitor observation wells itself but instead seek close cooperation and coordination with the above-mentioned ongoing programmes, in the first instance within the context of the Nalgonda Pilot Project. This should lead to a joint monitoring set-up that will also be applicable to (other parts of) the APWELL project area. It is intended that groundwater level (and quality) of productive wells established under the Project will be monitored by APSIDC.

Groundwater Quality

Water quality of ground water is adequate for irrigation purposes, with the exception of Prakasam District excess fluor contents requires pre-treatment with lime and alum. For existing wells in this area, the correct dosage of these compounds is being assessed and worked out in operational instructions. The proposed APWELL project area excludes zones with high fluoride content in groundwater.

The Project will carry out regular tests as follows:

- new wells:

  sampling of well water, standard analysis by APSIDC using irrigation water quality standards and, when applicable, using drinking water standards APSIDC and bacteriological tests (AFPRO and Laboratory of the National Association of Water Development Agencies, Pune);

- drainage water:

  1x during Kharif and 1x during Rabi cropping. Testing for pesticide residues;

Use of Agro-chemicals

Monitoring of agro-chemical use is proposed in two separate sample surveys, one baseline survey in 1996 and a second, trend assessment survey three years later. Two sites will be selected from among the borewell clusters selected using the selection criteria worked out by the Project. For each site baseline data and trends in agro-chemical use will be assessed.

The APWELL-project, in close cooperation with Agriculture Extension services, will assess the need for farmers' training and demonstration in safe use of chemical products in agriculture cropping. In case there appears a need for such programmes, such training/demonstration activities will be worked out, with special emphasis on:

- safe use, handling and storage of chemical products
- personal health care and safety measures
- avoidance of secondary poisoning and residual contamination
- safe application : dosage, timing frequency
- safe disposal of packing material.

When the need arises, the Project will, in cooperation with Agriculture Extension Services, prepare a well-illustrated simple manual on toxicity, safe application etc. of common agro-chemicals available on the market.

THE NALGONDA PILOT PROJECT

7 THE NALGONDA PILOT PROJECT

7.1 The Nalgonda District

The district has an area of about 14,240 km^2 and a population of about three million. The district comprisess 4 towns having their own municipal administration, and 1,115 villages, spread over 59 mandals(sub-districts), governed by Zila Parishad.

Nalgonda is relatively flat and slopes from the higher north-western part to the lower south-eastern part. The Musa river, a tributary of the Krishna river, enters the district in the Northern part. Krishna river itself forms the southern border of the district and flows from west to east. A huge reservoir created by the Nagarjuna Sagar dam in the Krishna is located in the south-western edge of the district. Apart from the Krishna, all rivers and streams in the district are seasonal. Throughout the district tanks and checkdams are found; most are empty by the end of the dry season. From Nagarjuna Sagar the left bank irrigation canal runs east, enclosing with River Krishna an irrigation area of about 1000 km2.

The entire district is underlain by granitic hardrock, except for the area between the left bank irrigation canal and River Krishna, which consists of limestone formations. The weathered zone in the elevated north-western part of the district has a depth of about 25 to 35 metres; towards the south the thickness of the weathered zone decreases to less than 15 metres.

The average rainfall amounts to about 750 mm per year and falls in two distinct periods: June-September and December-February. The number of hand-dug wells amounts to over 165,000 (census 1987). There are less borewells by far, but the number is increasing steadily by 1,500 to 2,000 wells per year. As a result, groundwater levels are dropping, some 5-10 meters over the past four years. Many dugwells have run dry recently, and in many areas total groundwater extraction start exceeding the infiltration from rain water. The government has launched a programme of check dam construction which aims at restoring the groundwater table through the creation of thousands of small percolation tanks scattered over the area.

7.2 Approach

The main objective of the Nalgonda Pilot Project is to prepare a groundwater management plan for the district, in order to help achieve sustainable groundwater use.

Groundwater management is complex because the number of water users/well owners is large and cooperation is practically non-existent. In groundwater management, which aims at optimizing the available groundwater, such co-operation is essential. In addition, the borewell owners should understand the limitation of the resource and its variability, depending as it is upon the yearly rainfall. Groundwater management becomes feasible if these two conditions are met.

Groundwater management includes monitoring and assessment of the reserves by the end of the monsoon; after a "poor" rainy season the need to irrigate is greater while the availability of groundwater is less. Farmers should come to understand the necessity to irrigate smaller areas or grow other less-water demanding crops in such a situation, and to consider groundwater as a common good, belonging to the community as a whole.

Farmers participation, aimed at developing jointly with Project staff practical measures of groundwater management will therefore be at the core of defining the plan. Such measures will be defined on the basis of technical studies but only those that are supported by the farmers will be adopted in the management plan. During the course of the project, farmer training will be developed and implemented.

In contrast with the original idea in the Project Documentment, the plans have a watershed as a basis, not a village, because the first is an entity with clear hydrogeological borders.

7.3 Methodology

Within the Nalgonda district a watershed of roughly 20 by 20 km will be chosen to serve as a model area for the development of methodologies and conduct of a number of detailed studies.

To arrive at groundwater management at watershed level the following methodology will be used. From several departments' hydrogeological data, meteorological, topographical, and socio-economic data will be collected. Analysis will indicate possible trends. Through participatory rural appraisal (PRA) information will be obtained on water users' ideas, attitudes and perception regarding groundwater management. PRA is an approach that enables the local people to present, share, and analyze their knowledge of life and their communities. As an approach, PRA is participatory, lightly unstructured, flexible, exploratory, iterative and empowering.

As mentioned earlier, PRA will be used to gather information from the local people about their knowelge of groundwater situation and about borewell operation. PRA will also be utilized in monitoriong borewell performance and in evaluating the performance of their organisations.

Data collection will start in the model area. All available data will be assessed and screened and then put into a database. The time needed for data collection in the model area is estimated to be one month. Spatial data on hydrogeomorphology, land use, surface water, drainage and watersheds will be gathered from interpretation of satellite imageries. Combination maps will be prepared using GIS.

Analysis will be in terms of time and space. From the analysis of groundwater time series over-exploitation can be deduced. The analysis of the spatial distribution of groundwater levels over the year gives insight into the groundwater reserves. Using regression and correlation techniques hydrographs can be derived and trends can be determined. If available and time allows socio-economic data on population will also be statistically analyzed and prepared for presentation into maps.

The methodology shall be used first in the model area. Afterwards the same methodology, except PRA, will be applied in the rest of the district.

In the model area 3 case studies will be carried out: a) a rainfall run-off study to get more insight in the recharge mechanism and the influence of the check dams on the hydro(geo)logy; b) a groundwater study, which will give insight into the fluctuations of the groundwater level due to increased groundwater use or poor rainfall over the years or recharge through checkdams or due to the use of different type of crops or a combination of diffrent factors; and c) a study on optimization of present monitoring network in order to get a good idea of the groundwater reserve inn the district.

7.4 Groundwater Management Plan at Watershed Level

In this document, "Master Ground Water Management Plan" means management of groundwater at the district level. On the other hand, " Groundwater Management Plan " means management of groundwater at the watershed level.

The Groundwater Management Plan will make recommendations on the areas to be planted with ID crops and the required quantity of groundwater. It will also suggest ways of managing water in times of scarcity especially at the end of the monsoon season.

A Groundwater Management Plan will contain detailed maps and recommendations for groundwater management. For each of the watershed area, a hard cover atlas on A3 paper format will be produced. The atlas will have the following:

- topographical map on scale 1:50,000;
- hydrogeomorphological and groundwater potential map;
- drainage pattern, including tanks and checkdams;
- landuse map;
- well distribution and monitoring wells;
- groundwater levels (for different periods of the year).

Questions such as, " how to set up a groundwater monitoring system?";
" what to do with collected data?"; and " how to draw conclusions from the measurements?" will all be answered in the Management Plan.

To reach a sustainable groundwater management an organization structure is needed. In the plan (sec.7.5) a set-up for this structure at village and watershed level is explained. Also the work which must be done for sustainable groundwater management is indicated.

The model area will be the first to have a groundwater management plan. The plan for the other watersheds will be developed over a period of twelve months. The collection of all groundwater management plans in the district will constitute Master Groundwater Management Plan.

The Groundwater Management Plan will also consider the influence of surface waters. In Andhra Pradesh a programme to construct thousands of checkdams is underway. The effects of the programme will be incorporated as far as possible in the groundwater management plans.

7.5 Organization of the Pilot Project

Staff input at consultant's side is as indicated in Chapter 8. Junior experts from the Netherlands will be deployed on the case studies at no extra cost to the project.

The quantity of work to be done in the framework of the pilot project is rather large, data collection, data input into a database and data processing for 1115 villages. To do all the work on data collecting and processing, 3 persons of the GWD will work for the pilot project on a full-time basis. The Deputy Director and the Assistant Director will be involved in the project on a part-time basis. The reason to engage members of the present staff is that they are acquainted with the area, its population and its problems and that the sustainability and continuity of the project are assured.

The Ground Water Department will inititiate and guide the implementation of groundwater management at watershed level. The department will also take care of setting up the district groundwater monitoring network and liaise between state governmental agencies and communities. The performance of those tasks requires a thorough knowledge of the situation and the ins and outs of the resulting master plan. The only logical step to guarantee sustainability is to continue the implementation of the groundwater management plan with the staff members earlier involved in the pilot project.

The involvement of the State GWD in the pilot project has another purpose. If the pilot project proves to be successful, it will also be implemented in the other districts of Andhra Pradesh. The State GWD is therefore the obvious party to carry out those tasks in the other districts. During the preparation of the master groundwater management plan in Nalgonda district the State GWD is counterpart to the project team.

The division of tasks between the GWD at state and district level can be characterized as follows. The district office with its knowledge and contacts at local level is responsible for data collection, storage and processing. The actual master groundwater management plan, which is a series of elaborated maps, recommendations and guidelines for groundwater management, is prepared at state level. The implementation of the groundwater management plans is a task for the district office.

Two staff members from the State GWD will be involved in the pilot project on a full-time basis. For the duration of the pilot project the two staff members will be taken into partnership with the project team and operate from the APWELL office in Hyderabad. Also, on a regular basis, visits will be paid to the Director of the State GWD to discuss progress and problems met during execution of the pilot project.

The final report will be prepared during the last two of months of the pilot project. The case studies will be worked out and issued separately. The collection of all reports and atlases will form the master groundwater management plan for Nalgonda district. The results of the pilot project will be presented in a seminar.

STAFFING

8 STAFFING

8.1 International Staff

The consultants' time chart as shown in Annex 7 is largely retained from the original Technical Proposal, except that the input of Ms. Ruth Urben is reduced to two months. During her first visit in June last it was decided that the present long-term expertise can cope with most of the tasks. Ms Ruben's input will only be required for specific advice.

It is proposed that the remaining 3 person months will be allocated partly to a short-term training module specialist and partly to a sociologist. The switch is meant to be cost neutral. The training module specialist is urgently needed to support the farmer participation/privatization/WID trainer, who is fully occupied in the farmer participation programme,in training activities and in fact take the lead in developing materials for various training subjects. The person needed must have a minimum of 10 years experience in training and irrigation management. It is also preferred that he/she must be well versed in group dynamics, sensitivity training, community organization. He/she must also have international experience working with various Irrigation Agencies.

The expatriate sociologist will assist both APWELL and the Nalgonda Pilot Project in sociological, farmer participation and WID activities. She will be appointed on a low-cost local contract

The curricula vitae of the training module specialist and the sociologist are given in Annex E.

8.2 National staff

The person months of the WID expert/trainer), the socio-agronomist, the agro-economist and the hydrogeologist remain unchanged.

It is proposed to reduce the input of Dr. K.K. Singh, Institutional Development Specialist, to 15 person months. This is partly at his own request and partly because adequate coverage in the discipline is available through the team leader/institutional development specialist and the farmer participation / privatisation/ WID trainer . The balance of 13 person months will be added to the person months of the following local consultants: the MQC Specialist (9 extra months) to set up quality control procedures at APSIDC; the M&E/MIS Specialist (2 extra months) who needs more time for M&E activities; and the water management/environmental specialist (2 extra months) to give more emphasis on the environment aspect of the project.

BUDGET

9 BUDGET

The budget for Technical Assistance component comprises two items that were to be specified in the Inception Report, namely "Training and NGO contracts", amounting to NLG 3.738 million (INR 74.76 million) and "Environmental Programme", amounting to NLG 0.4 million (INR 8 million). The proposed budgets for these two items are presented in Annex 13 together with the estimated cash flow of the Financial Assistance (Annex 12) provided by the APSIDC.

9.1 Training and NGO contracts

9.1.1 Training

Training is one of the most important activities in APWELL project. Its goals are to inform, motivate, induce behavioral changes and build the capabilities of APSIDC, NGOs, COs and Water Users' Groups. Training involves various activities consisting of workshops on the technical and institutional aspects of the project, observation trips (in-country and overseas) to places where target groups and project implementors could learn lessons on more efficient water management, improved cropping pattern, cooperatives management, watershed development and community organization. The centrality of training intervention in APWELL project is such that without it, it is impossible to achieve project objectives. Details of the budget on training are in Annex 10. The estimates are based on the following parameters:

a. The APSIDC people to be trained are the Executive Engineers, Deputy Exec. Engineers, Assistant Engineers at the districts and subdivisions covered by APWELL. This will also include the staff at the headquarters who are directly involved with the APWELL project implementation;

b. The training programs for the men and women water users will be conducted on a cluster basis and not on a borewell group basis. A cluster may consist of 3 to 5 borewell groups composing of 30 to 50 men and women water users. 2 to 3 clusters will be combined whenever possible for one training course depending on the type of the training and who need to be trained (committee members only or only a number of representatives from the WUGs);

c. The number of participants per batch of training is **30**;

d. Average duration of training is **2 days** so as not to disrupt participants' work/farm activities;

e. Number of training staff per training course (including resource persons) is **5;**

f. Cost items per batch of training includes: stationary and supplies; honoraria for resource person/s; accommodation expense (including meals and snacks); transportation cost of participants; venue and facilities; and miscellaneous). Attached is detailed budget estimates per batch of training for: APSIDC staff; NGOs/APWELL Project Team; and Water Users;

The costs per day for accommodation, venue and facilities are based on NIRD costs which came up to be the average cost after computing the costs of the other institutes, namely: WALAMTARI and MANAGE; trainings for the water users will be conducted at the village level hence, cost for accomodation, venue and facilities are deducted from the training costs; and resource persons from various institutions (GO and NGO) will be tapped whenever necessary and honorarium is pegged at Rs 1,000 per day per person.

9.1.2 NGO Contracts

NGOs will be contracted for a) Site Selection; b) Hiring of District Field Coordinators (DFCs)/Community Organizers (COs) and c) Process Documentation and other specific activities that will be determined later.

Site selection activities are undertaken by NGOs in collaboration with APSIDC, Ground Water Department and the Andhra Pradesh State Remote Sensing Application Centre (APSRAC).

A total of 3 District Field Coordinators (DFCs) and (eventually) 70 community Organisers (COs) are required by the project. DFC's and COs will be hired by the NGOs. They will be directly involved in the formation of Water Users' Groups that will eventually own and manage borewells. The specific tasks of field coordinators are supervision of community organizers, coordination with different agencies of government at the district level such as APSIDC, Agriculture Department, Electricity Board, NGOs, Office of the Panchayat Raj and Zila Parishad. Community organisers are responsible for organising strong water users groups through motivation, training, community mobilization and seminars on water management, improved crop production, watershed management and others.

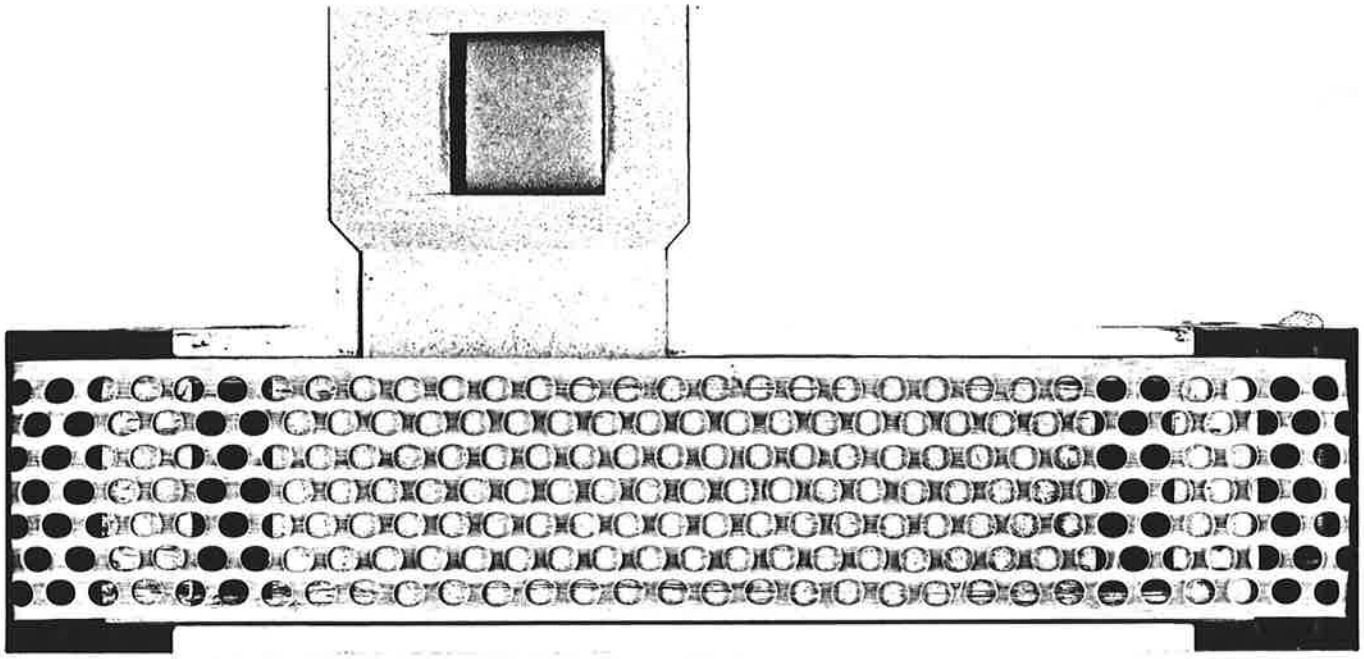
Process documentation will be undertaken in the pilot phase to monitor the process of developing the capacities of water users groups in decision making, planning, problem-solving, and in building up their collective capabilities for the successful management of borewells. The lessons learned from the pilot phase will be applied in organising water users' groups in other districts.

9.1.3 Gender Integrated Development

The GID budget requirements fall into three broad categories as follows:

1. Capacity building of women.
2. Training of women specifically for participating in APWELL borewells activity.
3. Gender Sensitization activity for the community.

Budget for item number 2 has already been accounted for in the overall training budget. The following break up will therefore be confined to items no. 1 & 3. (Annex 11: GID/WID Budget)



The project intends to hold a State-Level Conference at least twice a year. Through these conferences APWELL will share with the top governemnt officials, professionals, NGOs, and experts on various fields of development issues and lessons learned from the project. These conferences will also offer opportunities for those involved in the project to interact and learn from others on how to enhance project performance.

The budget under this category will also cover expenses of project staff in attending in-country conferences especially on topics related to irrigation water management, environment, gender, crops, community organization and others.

9.1.5 Field work

The number of field trips allowed are insufficient. On the average, local consultants are allowed only 8.8 days per month in the field. This is unrealistic and disadvantageous to the project especially since a lot of community mobilisation, field training, tracking of activities and collaboration with field-based agencies (GOs and NGOs) are required to implement the project successfully. To improve the situation, each local staff should be able to make a field visit at least ten days per month in the pilot phase and 15 days per month beginning year 3.

Similarly, an extra **vehicle** is required. The Project has at the moment two vehicles which have proved to be highly inadequate to cope with the demands of project staff who often needed to travel separately to different districts covering hundreds of miles. Initially, APWELL made use of rented vehicles. But this practice has proven not only to be very expensive but also unreliable due to the generally poor maintenance of rented vehicles. The extra operation costs can be covered from the original budget.

9.2 Environmental Programme

The breakdown of expected costs of the environmental programme is given in Annex 13 : General Budget. The background to the water quality tests and the surveys on agro-chemical use are explained in Section 5.3 and Chapter 6.

9.2.1 Natural Resource Mapping and Data Management

The Nalgonda Pilot Project aims at establishing a model for groundwater management, as well as carries out a number of groundwater studies including a recharge study and the development and testing of an optimum groundwater monitoring system. In support of these activities. natural resource mapping and data base management (GIS) will be carried out, which eventually will be extended to other districts. In the environmental budget NLG 60 000 has been reserved for that activity.

9.2.2 Water Harvesting/Saving at Farm Level

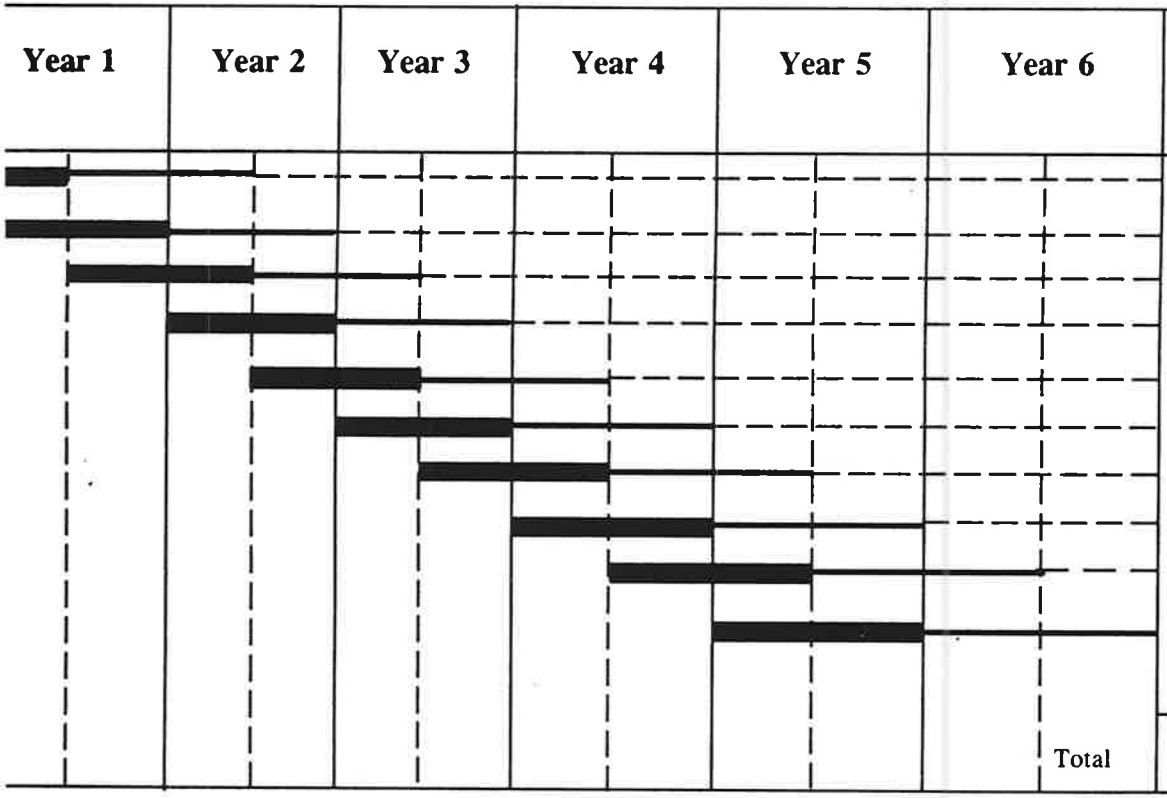
As elaborated in Section 5.3.1, project activities (i.e. establishing clusters of borewells at selected sites) will be linked to catchment rehabilitation, initiated by a multiplicity of programmes. In addition to these programmes, which usually extend over larger areas, there appears ample opportunity for water harvesting on a smaller (farmer's) scale. Such activities would directly benefit the farmers' families involved, the costs of such interventions would be low and the operation and maintenance of the structures would be the full responsibility of the benefitting farmers' family.

It is intended to mobilize the services of an international consultant and a national expert on Water Harvesting/Soil and Water Conservation technologies based on participatory management, for a period of 1.5 and 6 months, respectively.

9.3 Financial Assistance

Annex 12 shows the cash flow of expenditure of the financial assistance as provided by APSIDC. Annex 13 is the General Budget.

ANNEX 1 - Phasing of borewells



Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Successful wells drilled	Borewells Revitalized	Number of Districts covered
						0	0	0
						50	4	2
						130	16	3
						200	30	3
						620	75	7
						880	75	7
						880	75	7
						880	75	7
						880	75	7
						880	75	7
					Total	5400	500	7

ey :

6 months social preparation; 6 months drilling, construction, yield testing, electrification
1 year follow-up for construction quality guarantee
1 year intensive follow-up for turnover of borewells to farmers groups and afterwards
occasional follow-up

ANNEX - 2 - GENDER RELATED DOCUMENTS

1. Women and Development Profile of Andhra Pradesh, Thinksoft, Hyderabad - January, 1995.

2. Andhra Pradesh Mahila Samithi Society, Reports, 1994.

3. Education for Women's Equality, Mahila Samakhya, Department of Education, Ministry of Human Resource Development, Government of India, 1991.

4. "Women, Land and Technology A Cross Regional Perspective", Bina Agarwal in International Conference on Appropriate Agricultural Technology for Farm Women, organized by ICAR, New Delhi in Collaboration with International Rice Research Institute, Manila, 1988.

5. Women's Work in Third World Agriculture - Concepts and Indicators - ILO Geneva, 1990.

6. USAPANG BABAE - Gender Awareness through theater art, games and process, Manila, 1992.

7. ANTWA - Plan of Operations, DOA, Government of Andhra Pradesh.

8. Instructions for Officers for Mobilization of Women, District of Kurnool, 1995.

9. "Agenda for Women's Studies", Mainstream, June, 1995.

10. "Integrated Child Development Services Project of Women's Development", Child Welfare and Labour Department, Government of Andhra Pradesh, 1994.

11. Gender and Development - making the bureaucracy gender responsive, developed in Philippines for UNIFEM and NCRFW, 1994.

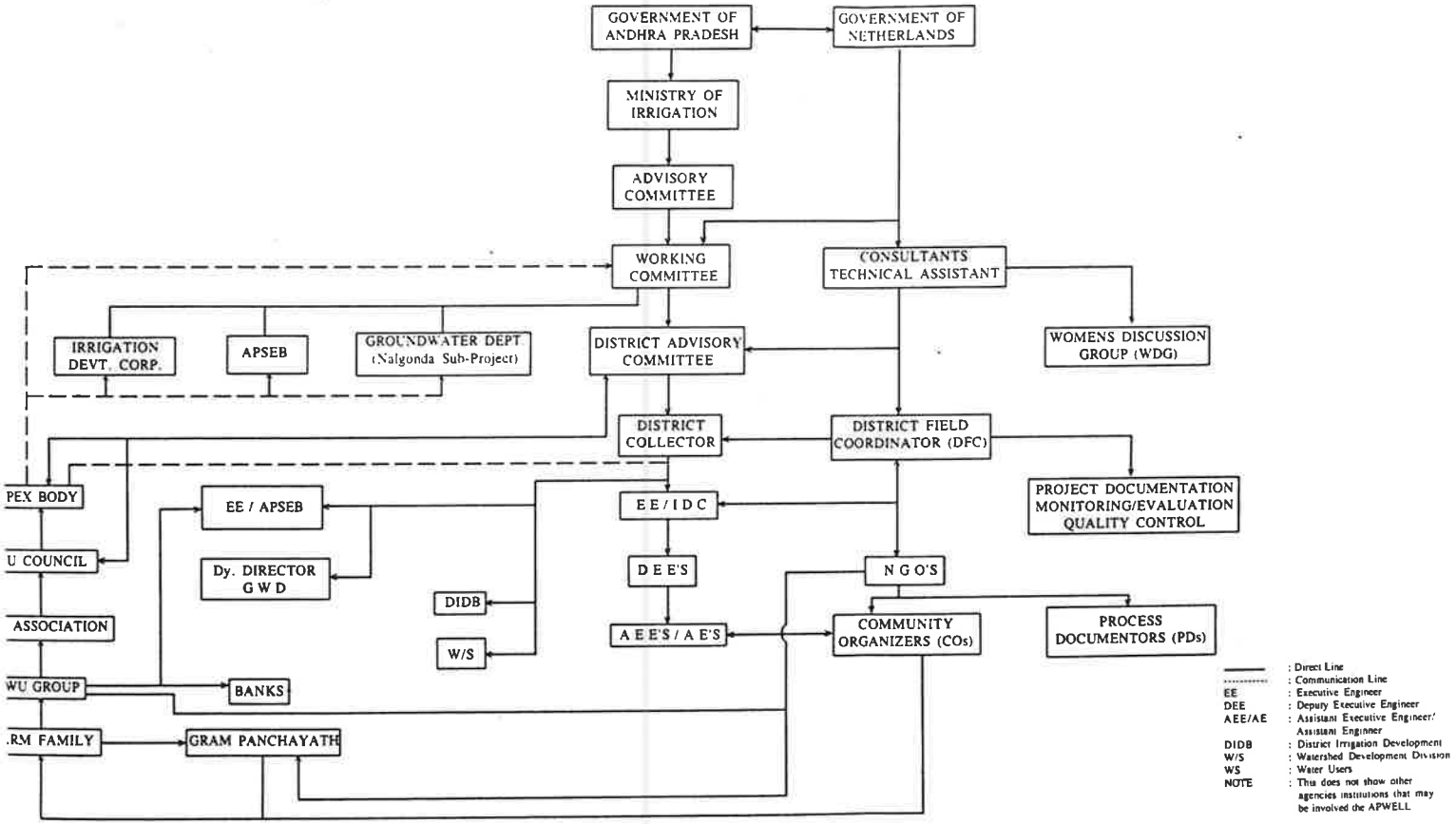
12. Programmes of Poverty Alleviation in Andhra Pradesh, PRRD and Relief Department of Government of Andhra Pradesh, Hyderabad, 1994.

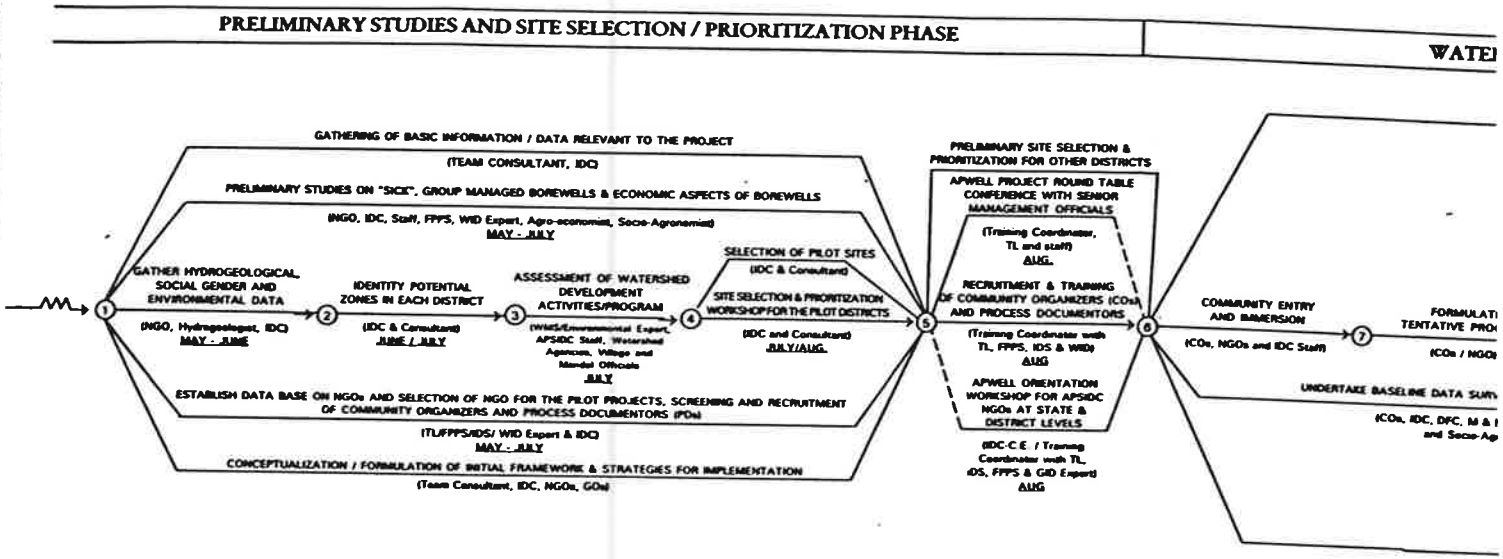
13. Rural Development Programmes in Andhra Pradesh - an overview, with details about Development of Women and Children in Rural Areas (DWCRA), January, 1995.

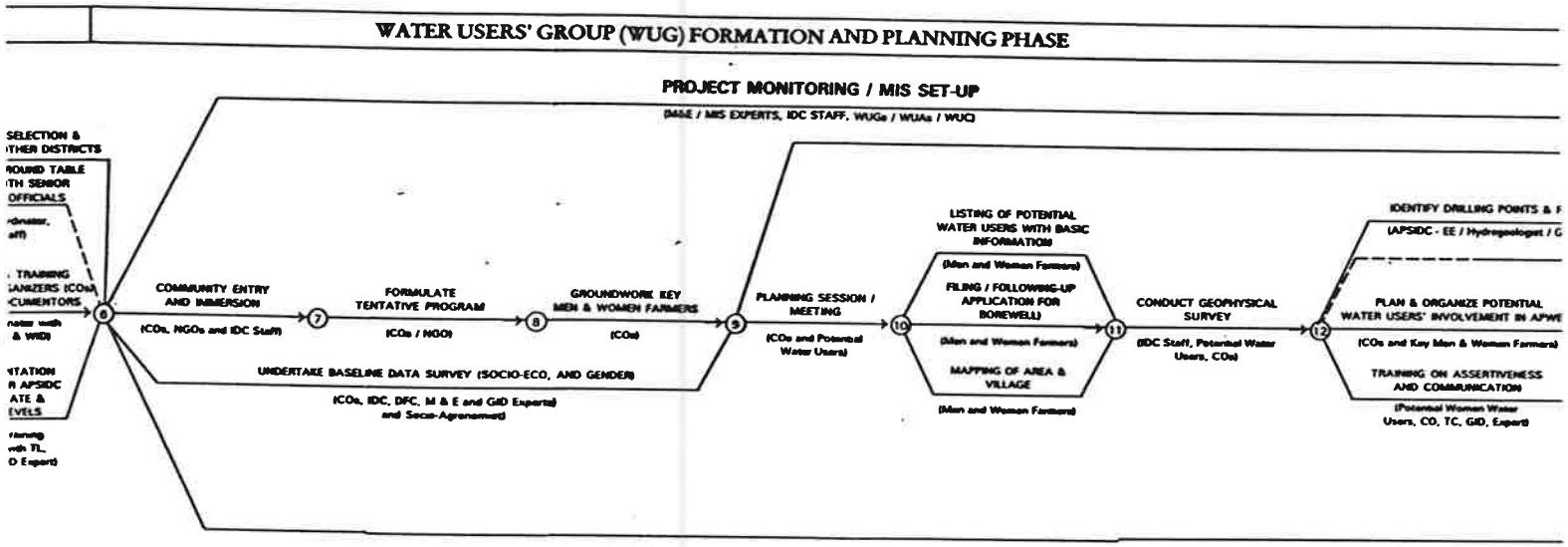
14. Gender Sensitization Workshop Documents, sponsored by Royal Netherlands Embassy at Ahmedabad and attended by the GID Expert, 1995.

15. Andhra Pradesh Government Action Plan for Women, 1994.

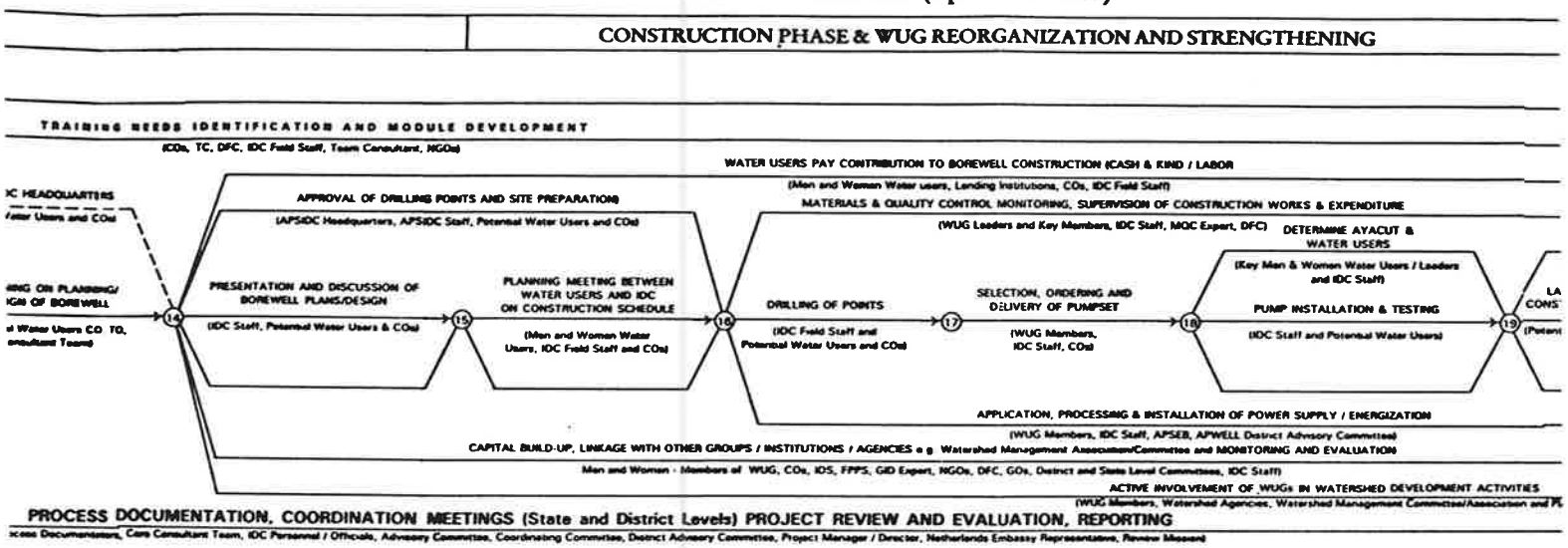
ANNEX 3 - APWELL ORGANOGRAM

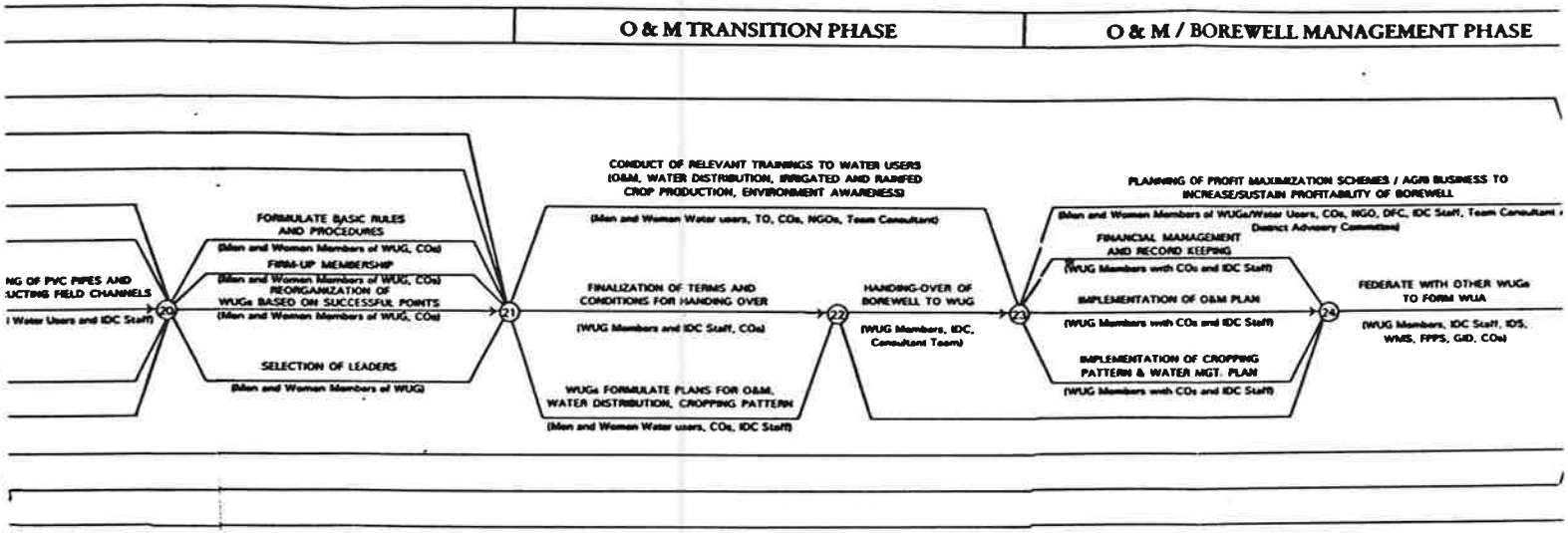



PRELIMINARY STUDIES AND SITE SELECTION / PRIORITIZATION PHASE
WATE
GATHERING OF BASIC INFORMATION / DATA RELEVANT TO THE PROJECT
(TEAM CONSULTANT, IDC)
PRELIMINARY STUDIES ON "SICK", GROUP MANAGED BOREWELLS & ECONOMIC ASPECTS OF BOREWELLS
(NGO, IDC, Staff, FPPS, WID Expert, Agro-economist, Socio-Agronomist)
MAY - JULY
GATHER HYDROGEOLOGICAL, SOCIAL GENDER AND ENVIRONMENTAL DATA
(NGO, Hydrogeologist, IDC)
MAY - JUNE
IDENTITY POTENTIAL ZONES IN EACH DISTRICT
(IDC & Consultant)
JUNE / JULY
ASSESSMENT OF WATERSHED DEVELOPMENT ACTIVITIES/PROGRAM
(WMS/Environmental Expert, APSIDC Staff, Watershed Agencies, Village and Mandal Officials)
JULY
SELECTION OF PILOT SITES
(IDC & Consultant)
SITE SELECTION & PRIORITIZATION WORKSHOP FOR THE PILOT DISTRICTS
(IDC and Consultant)
JULY/AUG.
ESTABLISH DATA BASE ON NGOs AND SELECTION OF NGO FOR THE PILOT PROJECTS, SCREENING AND RECRUITMENT OF COMMUNITY ORGANIZERS AND PROCESS DOCUMENTORS (PDs)
(TL/FPPS/IDS/ WID Expert & IDC)
MAY - JULY
CONCEPTUALIZATION / FORMULATION OF INITIAL FRAMEWORK & STRATEGIES FOR IMPLEMENTATION
(Team Consultant, IDC, NGOs, GOs)
PRELIMINARY SITE SELECTION & PRIORITIZATION FOR OTHER DISTRICTS
APWELL PROJECT ROUND TABLE CONFERENCE WITH SENIOR MANAGEMENT OFFICIALS
(Training Coordinator, TL and staff)
AUG.
RECRUITMENT & TRAINING OF COMMUNITY ORGANIZERS (COs) AND PROCESS DOCUMENTORS
(Training Coordinator with TL, FPPS, IDS & WID)
AUG
APWELL ORIENTATION WORKSHOP FOR APSIDC NGOs AT STATE & DISTRICT LEVELS
(IDC-C.E / Training Coordinator with TL, IDS, FPPS & GID Expert)
AUG
COMMUNITY ENTRY AND IMMERSION
(COs, NGOs and IDC Staff)
FORMULATI
TENTATIVE PRO
(COs / NGO
UNDERTAKE BASELINE DATA SUR
(COs, IDC, DPC, M &
and Socio-Ag


WATER USERS' GROUP (WUG) FORMATION AND PLANNING PHASE
PROJECT MONITORING / MIS SET-UP
(M&E / MIS EXPERTS, IDC STAFF, WUGs / WUAs / WUC)
SELECTION &
THER DISTRICTS
ROUND TABLE
TH SENIOR
OFFICIALS
TRAINING
ILIZERS (COs)
CUMENTORS
6
COMMUNITY ENTRY
AND IMMERSION
(COs, NGOs and IDC Staff)
7
FORMULATE
TENTATIVE PROGRAM
(COs / NGO)
8
GROUNDWORK KEY
MEN & WOMEN FARMERS
(COs)
9
PLANNING SESSION /
MEETING
(COs and Potential
Water Users)
10
LISTING OF POTENTIAL
WATER USERS WITH BASIC
INFORMATION
(Men and Women Farmers)
FILING / FOLLOWING-UP
APPLICATION FOR
BOREWELL
(Men and Women Farmers)
MAPPING OF AREA &
VILLAGE
(Men and Women Farmers)
11
CONDUCT GEOPHYSICAL
SURVEY
(IDC Staff, Potential Water
Users, COs)
12
IDENTIFY DRILLING POINTS &
(APSIDC - EE / Hydrogeologist /
PLAN & ORGANIZE POTENTIAL
WATER USERS' INVOLVEMENT IN APW
(COs and Key Men & Women Farmers)
TRAINING ON ASSERTIVENESS
AND COMMUNICATION
(Potential Women Water
Users, CO, TC, GID, Expert)
UNDERTAKE BASELINE DATA SURVEY (SOCIO-ECO, AND GENDER)
(COs, IDC, DFC, M & E and GID Experts)
and Socio-Agronomist)

APWELL PILOT PHASE IMPLEMENTATION PROCESS (April 1995 - 1997)




O & M TRANSITION PHASE
O & M / BOREWELL MANAGEMENT PHASE
NG OF PVC PIPES AND
UCTING FIELD CHANNELS
Water Users and IDC Staff)
20
FORMULATE BASIC RULES
AND PROCEDURES
(Men and Women Members of WUG, COs)
FIRM-UP MEMBERSHIP
(Men and Women Members of WUG, COs)
REORGANIZATION OF
WUGs BASED ON SUCCESSFUL POINTS
(Men and Women Members of WUG, COs)
SELECTION OF LEADERS
(Men and Women Members of WUG)
21
CONDUCT OF RELEVANT TRAININGS TO WATER USERS
(O&M, WATER DISTRIBUTION, IRRIGATED AND RAINFED
CROP PRODUCTION, ENVIRONMENT AWARENESS)
(Men and Women Water users, TO, COs, NGOs, Team Consultant)
FINALIZATION OF TERMS AND
CONDITIONS FOR HANDING OVER
(WUG Members and IDC Staff, COs)
WUGs FORMULATE PLANS FOR O&M,
WATER DISTRIBUTION, CROPPING PATTERN
(Men and Women Water users, COs, IDC Staff)
22
HANDING-OVER OF
BOREWELL TO WUG
(WUG Members, IDC,
Consultant Team)
23
PLANNING OF PROFIT MAXIMIZATION SCHEMES / AGRI BUSINESS TO
INCREASE/SUSTAIN PROFITABILITY OF BOREWELL
(Men and Women Members of WUGs/Water Users, COs, NGO, DFC, IDC Staff, Team Consultant /
District Advisory Committee)
FINANCIAL MANAGEMENT
AND RECORD KEEPING
(WUG Members with COs and IDC Staff)
IMPLEMENTATION OF O&M PLAN
(WUG Members with COs and IDC Staff)
IMPLEMENTATION OF CROPPING
PATTERN & WATER MGT. PLAN
(WUG Members with COs and IDC Staff)
24
FEDERATE WITH OTHER WUGs
TO FORM WUA
(WUG Members, IDC Staff, IDS,
WMS, FPPS, GID, COs)

Annex 5: Site Selection Criteria

Objective

The APWELL project aims to improve the pysical quality of life of small and marginal men and women farmers. It envisages the organization of strong and viable water users' organization that can fully and actively participate in the planning/design and construction of borewell irrigation, and eventually assume full responsibility in the management of the constructed borewells. Sustained agricultural production, profitability and functionality of the borewells are major concerns of the project hence, project components such as training on agronomy, irrigated and rainfed crop production, groundwater resource management linking-up with watershed development, and sustainable agriculture are also envisioned to be undertaken during project implementation.

In order to successfully achieve the goals and objectives of APWELL, careful and judicious selection and prioritization of sites and potential water users for project implementation must be adhered to by the APSIDC and the Consultants.

Procedure and Methodology

First Stage: Identification of Potential Zones

1. Gather and compile hydrogeological, geophysical, and hydrogeomorphological data and satellite imageries available in APSIDC, District, Remote Sensing Center and Groundwater Department.

2. Identify major watersheds in the district and within these major watersheds, demarcate the sub-watersheds taken up for watershed development by the different agencies in the district. Also, locate the villages within these watersheds.

3. Superimpose the groundwater potential and assess recharge potential in the villages within the watershed or minor watershed.

4. Review and analyze the data and identify the villages within the watersheds which satisfy the technical criteria (see attached)

5. For each potential village, secure a map (scale 8 inches: 1 mile or 1 inch: 660 feet). On this map: a) demarcate the mini-watersheds along with drains, water bodies like lakes, tanks, ponds, etc.; b) mark the existing wells and borewells and other irrigation schemes, their exact location and areas irrigated in order to determine the present status of water utilization; and c) demarcate watershed development activities so far done (if there is any) and planned for the next five years.

Second Stage : **Conduct of In-depth Study and Selection of Potential Borewell Clusters in the Potential Villages**

1. The following data should be gathered at each mandal and village:

Mandal Level (Secondary data)

a. Land ownership pattern (% of small and marginal farmers, % of women owning land)
b. Migration data (% of male household heads migrate)
c. Data on caste, ethnic/tribal categories of the population (% SC/ST/BC/OC/Muslim/Lambada,etc)
d. Rural Development Programs being undertaken and who are involved/client-groups
e. Over-all irrigation development status and irrigation program of various agencies/institutions in the area. Borewell density must be established
f. Womens' groups/organizations existing in the sample villages covered by the Mandal

Village Level (Secondary data)

a. Items a to f of the above should be validated with the village officials/leaders and village government offices

b. % women headed households

Primary data to be gathered through PRA exercise

a. presence of small and marginal men and women-farmers

b. presence of women household heads and women landowners

c. Caste and ethnic background of men and women-farmers (% ST/ BC/SC/OC/Muslim/Lambada,etc)

d. willingness of potential water users to get organized and contribute to the cost of the borewell

e. acceptance of the potential water users of the project concepts and methodologies

f. history of cooperation among the village people on any program or undertaking for their benefit. Also, level of cooperation and leadership within and among existing organizations or groups in the village (both men and women groups)

g. environmental impacts of project on other water users in terms of: density of borewells and salinization.

2. In the village map, delineate: residential areas; location of domestic water supply source/s; and other infrastructures and facilities.

3. In the village map, potential clusters, of about 100 to 150 acres, where APWELL borewell construction are feasible must be delineated. The identification of these clusters (3-5 clusters per village) must be based on the data collected and must pass the other site selection criteria on social and environmental aspects (see attached). As far as possible considering the level of groundwater exploitation, clusters must be identified at various parts of the village and not in just one place only. In this manner, the impact of the project would be felt all around the village.

4. A district map consolidating the village maps must be produced delineating the potential zones (mandals and villages) and the potential clusters for APWELL implementation.

Third Stage : Prioritization of Sites/Clusters Selected in the Mandals and Villages and Programming of Borewell Implementation in each District

Once the sites/clusters in the villages have been selected, the APSIDC and Consultant will then prioritize these using the prioritization criteria and point system (see Appendix B). In each district, the sites/clusters selected will be prioritized/ranked and this will be the basis for programming/ phasing-in the APWELL implementation in each district. This will also help in determining the number of borewells to be implemented in each district for a specific year.

Criteria for Site Selection

A. Technical Aspect

1. Availability of ground water

   Certain
   Probable
   Uncertain (Discard)

2. Availability of Electricity.

   Available
   Not Available (Discard)

3. Ground water recharge potential

   Very good
   Good
   Satisfactory
   Poor/needs development(Discard)

4. Soil Type

   Soil with good drainage
   Alkaline Soil (Discard)

B. Social Aspects

1. Presence of small and marginal farmers

   More than 50%
   at least 50%
   Less than 50% (Discard)

2. Project Concept and Participation

   More than 50% accept
   Majority is indifferent/hostile (Discard)

C. Environmental Aspect

1. Present Density of Borewell and Area Irrigated

   One borewell per >30 acres
   One borewell per 30 acres
   One borewell per 15 acres and below (Discard)

2. Salinisation Risk

   None/nil
   Low
   High (Discard)

Criteria for Prioritization

1.	Availability of electricity		10
	Available immediately	10	
	Within 1-3 months	7	
	Within 6 months	5	
	Over 6 months	3	
2.	Ground Water Recharge potential		10
	Very good	10	
	Good	5	
	Average	3	
3.	Watershed Development Program		10
	On-going	10	
	To be implemented	5	
	Not to be implemented	0	
4.	Presence of small and marginal farmers		10
	>50%	10	
	At least 50%	5	
5.	Density of Borewells and Area Irrigated		10
	One borewell per >30 acres		
	One borewell per 20-30 acres		
6.	Salinization Risk		10
	None	10	
	Low	5	
7	Soil Type		10
	Soil with good drainage		
	Soil free from alkalinity		
8.	Composition of potential water users based on caste/ethnic background		10
	Homogenous	10	
	Slightly mixed/heterogenous	5	
	Highly mixed/heterogenous	3	

9.	Willingness of potential water users to organize and contribute at least 10% of the costs of the borewell		5
	>50% are willing	5	
	<50% are willing	3	
10.	Number of women household heads (including those whose husbands migrate for 1 cropping season or more)		5
	>15%	5	
	10% to 15%	3	
	< 10%	1	
11.	History of co-operation among village people and among/within existing groups in the village (men and women groups)		5
	Strong	5	
	Weak	3	
	None	0	
12.	Leadership in the village and in the existing groups (men and women groups)		5
	Good	5	
	Average	3	
	Bad/Weak	0	

ANNEX 6 - APWELL TRAINING PROGRAMME

NO.	TRAINING TOPICS	FOR WHOM	WHEN	BY WHOM
A	**APSIDC Senior Mgt. and Staff**			
01.	APWELL Project Orientation	APSIDC Senior Mgt. and other GO and NGO Officials	Before Pilot Phase implementation (Sept.1995)	Training Coordinator (TC) and TA Consultant
02.	Orientation on Participatory and Community Organization Concepts	APSIDC Executive Engineers (EEs) and Deputy Executive Engineers (DEEs) at the district, EEs and Liason Officer for APWELL	-do-	-do-
03.	APWELL Mgt. and Implementation Procedures (Pilot Phase)	Chief Engineer (Liason Officer for APWELL), Field Personnel at the District and Sub-division level up to AEE level	Beginning of pilot phase (October 1995)	-do-
04.	Total Quality Mgt.(Borewell Planning, Construction Schedule, Procurement and O&M Aspects)	-do-	Staggered within pilot phase. To be given to new engineers as need arise	TA Consultant with APSIDC Senior Mgt. and Liason Officer for APWELL
05.	Gender Sensitivity in Planning and Implementation	-do-	October 1995	NGO with the WID/GID Experts & TC
06.	Environmental Awareness and Groundwater Mgt.	-do-	January 1996	Environmental Experts, TC, NGO/GO
07.	Borewell O&M Planning	Hydrogeologist, DEEs, AEEs and Mechanics	May 1996 & every year for new engineers	APSIDC Liason Officer, WMS, TC, and other TA Consultant
08.	Irrigated Crop Management	DEEs, and AEEs,	-do-	-do-
09.	M&E	EEs and DEEs at the district, EEs and Liason Officer for APWELL (Registered Office)	Oct. 1995 & every year for new engineers	M&E Experts

NO.	TRAINING TOPICS	FOR WHOM	WHEN	BY WHOM
B.	**NGOs and District Field Coordinators(DFCs)**			
01.	Predeployment and Community Organization	Community Organizers (COs), DFCs, PDs and and NGO Representatives	October 1995 & June 1996	TA Consultant and GO/NGO Resource Persons
02.	Process Documentation	DFC, COs, PDs, Project M&E Staff	October 1995	-do-
03.	Gender Sensitivity in Project Implementation	DFC and COs and other NGO representatives	Oct. 1995 & June 1996	NGO with the GID/WID Experts & TC
04.	Assertiveness and Communication	-do-	-do-	TC, GO/NGO, with TA Consultant
05.	Borewell Planning and Design	-do-	Dec.1995 & Dec. 1996	APSIDC Staff TC, MQC Specialist
06.	Group Organization and Leadership	-do-	Nov. 1995 & Nov. 1996	TC, GO/NGO with TA Consultant
07.	Financial Management	-do-	-do-	-do-
08.	Borewell O&M Planning	-do-	May'96/1997	APSIDC Staff with TA Consultant
09.	Design and Planning for Water Distribution	-do-	-do-	-do-
10	Environmental Awareness and Groundwater Mgt.	-do-	Jan.'96/1997	Env'l.Expert /WMS and TC

NO.	TYPE OF TRAINING	FOR WHOM	WHEN*	BY WHOM
C.	**Water Users and WUG Representatives**			
01.	Community Gender Sensitization and Gender Planning	Potential women and men water users	WUG formation & planning phase	NGO, TC, COs and GID Expert
02.	Assertiveness and Communication	Potential women water users	-do-	NGO, TC, COs IDS & FPPS
03.	Training on Borewell Planning and Design	Men and women members of WUGs	-do-	APSIDC Staff, COs, TC, WMS
04.	Group Organization and Leadership (study tour)	-do-	-do-	NGO, TC, COs FPPS & IDS
05.	Financial Management (tutorial)	WUG Committee members	-do-	-do-
06.	Bookkeeping/Recordkeeping (tutorial)	WUG Committee members	-do-	NGO, TC, COs
07.	Borewell O&M Planning	WUG men and women members	End of construction	APSIDC Staff, COs, TC, DFC
08.	Design and Planning for Water Distribution	-do-	-do-	-do-
09.	Environmental Awareness/ Groundwater Mgt. (study tour)	-do-	O&M Transition phase	Environmental Expert, TC, NGO/GO, COs
10.	Irrigated Crop Management (study tour)	-do-	-do-	NGO, COs, DFC, Agronomist
11.	Agribusiness/Sustainable Agriculture (study tour)	-do-	-do-	TC, NGO/GO Resource Staff, Agro-Economist,COs
12.	M&E	WUG Committee members	Before construction phase	M&E Experts, TC, COs, DFC

* The schedule of training is based on the borewell development phases (planning, construction, O&M transition, and O&M phases).

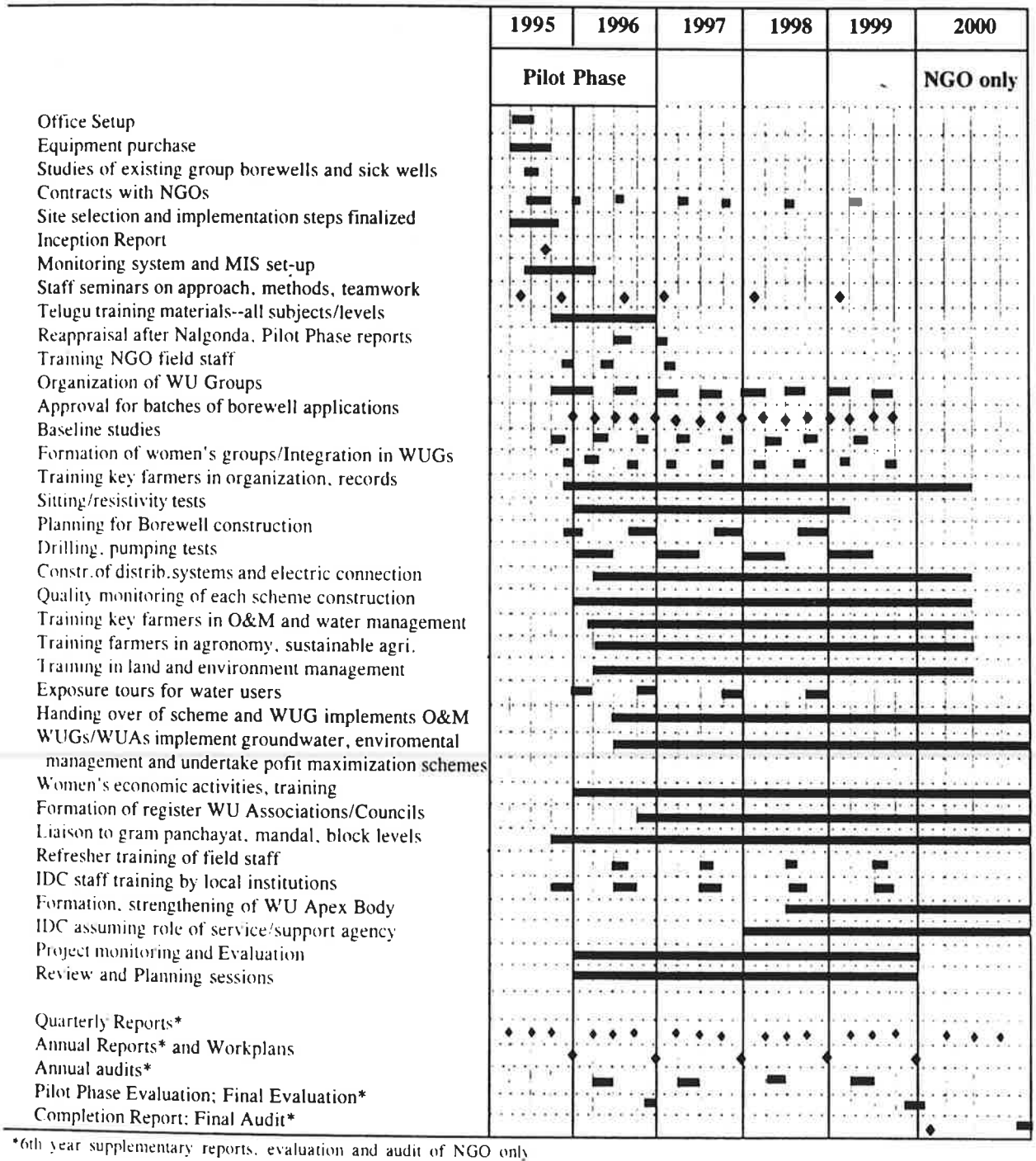
Annex 7 - Consultants' time-chart

	p.mo.	Year1*	Year2	Year3	Year4	Year5
		Pilot Phase				
International Consultants, APWELL						
Team Leader/Institutional Dev. spec., Mr Carlos Isles	60					
Farmer part., privatization/WID trainer, Ms V Pineda	51					
Extension/WID expert, Ms R Urben	2					
Environmentalist, Mr B V Lavieren	5					
Hydrogeological surveys trainer, Mr M Lodder	2					
MIS Expert, Mr G Groeneveld	1.5					
M & E expert, Mr J de Kraker	1.5					
Project Manager, Mr A Tempelman	3					
Training Specialist, ...	2					
Sociologist, Ms Y Bogaurts	10					
sub-total	138					
International Consultants, Nalgonda						
Hydrogeologist, Mr L Dijkhius	18					
Sr. Hydrogeologist, Mr M Lodder	3					
GIS Expert, Mr Groeneveld	3					
Agro-economist, Mr A Tempelman	1					
Water resource trainer, Mr M Lodder	1					
Unspecified	1					
sub-total	27					
total international	156					
Local Consultants, APWELL						
WID expert trainer, Ms J Jairath	60					
Institutional dev., spec. Dr K K Singh	15					
Water man./environment spec., Mr C S Rao	23					
Training coordinator, Vacant	19					
Socio-agronomist, Ms Vijaya Shyamala	14					
M & E MIS Expert, Dr M Rajagopalan	10					
Agro-economist, Dr G Pingle	6					
Hydrogeologist, Mr S Ramadurai	5					
MQC specialist, Mr M S Dhillon	14					
sub-total	166					
Local Consultants, Nalgonda						
GIS Expert, Dr Afzal Mohamad	4					
Environment spec., Mr C S Rao	2					
sub-total	6					
total local	172					

* Project Year 1 April - 31 March

▪▪ Intermittent

Annex 8 - Condensed activities time-chart



*6th year supplementary reports, evaluation and audit of NGO only

Annex 9 - Consultants' activities and tasks

Activities and Tasks	Euroconsult-BKH: Team Leader/Inst. devl.sp.	Farmers part.-Privat.sp WID	IRDAS: Institut. dev. spec.	WID expert/trainer	Training coordinator	Socio agronomist	Environment spec.	Hydrogeologist	Water manag. spec.	Agro-economist	MQC specialist	GIS exp (Nalgonda)	M&E/MIS expert
				Extension/WID expert	Training expert		Environmentalist	Hydrogeologists (Nalgondal)		Agro-economist		GIS expert (Nalgondal	MIS expert + M&E expert
Project set-up, equip. purchase	●		○	○				○				○	
Coordinate TA, NGOs, IDC, GWD, Elect. Board	●	○	○					○					
Studies-well group, sick wells, others		●				○			○	○			
Contract NGOs	●	○	○										
Inception Report, all reports	●	○	○	○	○	○	○	○	○	○	○	○	○
Countrsign GoAP reimburs, claims	●										○		
MIS and M&E set-up													●
Training NGO senior staff	○	○	○	○	●	○	○		○	○	○		
Organizing seminars, workshops		○			●								
Strategy, farmers' initiative approach		○	●	○		○							
Criteria, approval for wells	○	●	○			○	○	○			○		
Baseline studies, other studies		●	○			○				○			
Advise WUG formation		○	●	○									
Advise farmer training, all subjects		○			●	○	○		○		○		
Liaison with banks; credit terms		○		○		○				●			
Advise women's group formation, activities		○		●									
Arrange all Telugu training materials		○	○	○	●	○	○		○	○			
Advise irrigated agri, extension methods				○		●				○	○		
Advise/organize domestic water supply		●		○				○	○				
Train farmers in water management, costing					○	○	●		●	○			
Train farmers in environ. management								●					
Organize Nalgonda Project	○						○	●					
Provide Nalgonda project TA		○			○		●	○	○				○
Environment monitoring, training							●	○			●	○	
Quality monitor IDC construction, repairs	○											○	
Liaison with Collector, dt offices	○	○	●										
Liaison gram, panchayat, mandal, blocks		○	●	○	○	○	○		○				
Organize farmer tours, demonstrations		○	○		●								
Set up GIS-Nalgonda sub-project				○								●	
Organize WU Assns., tiers, apex body	○		●	○		○							
Organize micor-basin, watershed management							●		○				
Advise farmer water man. plans, Nalgonda		●		○						○			
Prepare district water resource plan		○					○	●	○	○		○	
Train IDC technical staff	○	○	○		●		○		○		○		○

● Main responsibility
○ Secondary responsibility

ANNEX 10 - Detailed Training Budget

1. Training Budget Requirements (excluding inflation)

Sl. No.	TYPE OF TRAINING	NO. OF DAYS	NO. OF BATCHES	TOTAL COST (at Rs 39,500 per batch)
A.	**APSIDC Senior Mgt. and Staff**			
01.	APWELL Project Orientation Workshop	1	1	Rs 39,500
02.	Orientation Training on Participatory, Community Organization and Gender Concepts	2	2	79,000
03.	APWELL Mgt. and Implementation Procedures for Pilot Phase and M&E	2	3	118,500
04.	Workshop on Total Quality Management (Borewell Planning, Construction Schedule, Procure-ment, Implementation and O&M)	5	3	118,500
	Sub-Total	10	9	**Rs 355,500**
B.	**District Field Coordinators and NGOs' Staff**			
01.	Predeployment, Community Organization and Gender Training	14	2	192,000*
02.	Group Organization, Leadership and Financial Management	3	2	79,000
04.	Borewell Planning, Design and Construction	2	2	79,000
05.	Borewell O&M Workshop	2	2	79,000
06.	Groundwater Use and Management * Cropping Pattern Formulation * Water Sharing * Watershed development activities	2	2	79,000
	Sub-Total	23	10	**Rs 508,000**

* The budget requirement for this is different from the costing per batch because of the duration of the training. See Annex 10 for details of this budget.

Sl. No.	TYPE OF TRAINING	NO. OF DAYS	NO. OF BATCHES	TOTAL COST (at Rs 7,000 per batch)
C.	**Target Men and Women Water Users**			
01.	Gender Sensitivity Sessions and Communication and Assertiveness Training	2	1,080	7,560,000
02.	Borewell Planning, Design and Construction Workshop	2	1,080	7,560,000
03.	Borewell O&M Planning and Groundwater Management Planning Workshop	2	1,080	7,560,000
	Sub-Total	6	3,240	**Rs 22,680,000**
D.	**Study Tours**			
01.	For Water Users	2	8	132,000
02.	For APSIDC and APWELL Staff	10	1	578,400
	Sub-Total			**Rs 710,400**
E.	**Trainors' Training**	10	1	123,500*
	TOTAL			**Rs 24,377,400**

* The budget requirement differs from the costing per batch due to duration and venue of training. See Annex 10 for details of the budget.

2 Details per batch of 35 persons including training staff

A.	**Training for APSIDC, TA and NGO Staff**		
1.	Stationary and supplies	Rs	2,000
2.	Honorarium for resource persons		2,000
3.	Accommodation expense (including meals and snacks at Rs 250/day x 35 x 2 days		17,500
4.	Venue and facilities at Rs 1,000/day x 2		2,000
5.	Transportation expense of participants at Rs 500 x 30		15,000
6.	Miscellaneous		1,000
	TOTAL		**Rs 39,500**

B. **Training for Community Organizers (COs)**

A maximum of 70 COs is assumed to be hired to cover the target number of 5,400 borewells or to organize about 55,000 potential men and women water users. Only 2 batches of training is proposed to be conducted at 30 participants per batch. It is assumed that the first batch of COs trained will be deployed to other districts/areas after 2 years.

The duration of the training will be for 14 days (2 weeks): theoretical or classroom session for 4 days and field practicum for 7 days. The following are detailed budget estimates per batch of training:

1.	Stationary and supplies	Rs	3,000
2.	Transport expense at Rs 1,000 x 30		30,000
3.	Accomodation expense at Rs 250 x 4 x 35 (including training staff)		35,000
4.	Venue and facilities at Rs 1,000/day x 4		4,000
5.	Field allowance at Rs 100 x 7 x 30		21,000
6.	Miscellaneous		3,000
	TOTAL		**Rs 96,000**

C. **Training for Water Users**

1.	Stationary and supplies	Rs	2,000
2.	Honorarium for resource persons		1,000
3.	Meals and snacks at Rs 50 x 30 x 2 days		3,000
4.	Miscellaneous		1,000
	TOTAL		**Rs 7,000**

D. **Trainors' Training**

1.	Stationary and supplies	Rs	3,000
2.	Honoraria for resource persons		5,000
3.	Accomodation expenses at Rs 250 x 35 x 10 days		87,500
4.	Venue and facilities at Rs 1,000 x 10		10,000
5.	Transportation expense at Rs 500 x 30		15,000
6.	Miscellaneous		3,000
	TOTAL		**Rs 123,500**

E. Study Tours for APSIDC Staff and Water Users

1. For APSIDC & APWELL Staff (4)

The study tour aims to expose the APSIDC and APWELL staff on the experience of 2 Asian countries e.g. National Irrigation Administration, Philippines and Indonesia in implementing their minor irrigation scheme using the participatory and community organization concepts. The tour will be for 20 days including travel time. The following is the detailed budget estimate for this:

a.	Plane fare (round trip) at Rs 45,000/person x 4	Rs	180,000
b.	Per diem/allowance at per day x 20 days x 4	Rs	2,480 198,400
c.	Training cost at Rs 50,000/person		200,000
	TOTAL	**Rs**	**578,400**

2. For Water Users

It is proposed to organize 8 batches of study tours for selected men and women water users in the APWELL sites to other districts/villages within the state. The study tours aim to expose the farmers on successful programs focusing on the following aspects:

a. Proper groundwater use and management by adopting suitable cropping pattern like horticulture, fruit trees, and ID crops;

b. Strong and functional water users' groups/associations carrying-out full O&M responsibility for borewell and other irrigation schemes;

c. Profitable and sustainable project ventures by farmers' groups e.g. agribusiness; and

d. Strong and cohesive women's groups.

Each batch will consist of 30 water user-representatives from the various WUGs in the districts covered by APWELL. Detailed costing per batch is as follows:

a.	Transport cost (round trip and for 2 days)	Rs	10,000
b.	Meals and snacks at Rs 50 x 30 x 2		3,000
c.	Accommodation at Rs 5 x 30 (1 night)		1,500
d.	Miscellaneous (meals and snacks, for study hosts and honoraria)		2,000
	Total	**Rs**	**16,500**

Rs 16,500 x 8 study tour batches = Rs 132,000

Annex 11: Gender Intergrated Development Budget

Resources required (for first year)

(1) **Resources Persons**

	No. of days	Travel & Expenses	Fees	Total
Senior - 2	60	50,000	48,000	98,000
Middle Level-2	120	80,000	60,000	1,40,000
Junior Level-4	480	1,20,000	1,28,000	2,48,000

Total Rs. 4,86,000

(2) a. **Training at Resource Institutes of 2 women per village**

For 3 villages - 6 women

@ Rs.5,000/- per woman - Rs. 30,000

b. **Training of GID Expert at Resource Institute** Rs. 15,000

c. Travel to other Ditch Project Areas - @ 4 visits per year Rs. 60,000

(3) Development of core group from within the target population in the pilot site areas which can be used for mobilizing women the special techniques in surrounding APWELL sites as the project is phased in.

Training Materials/Equipment	Rs. 70,000
Travel	Rs. 60,000

Total Rs. 1,30,000

(4) **Capability Building Activities**

a. Organization of women around issues related specifically to women eg. domestic, health, child care, fodder/fuel etc. in 5 villages — Rs. 25,000

5. **Conduct of Gender Sensitization Activity in field areas**

a. Cultural Programs @ 2 per village per year for 5 villages — Rs. 40,000

b. Women's Conference/workshop networking with all other groups in the area - 1 per year per village — Rs. 45,000

c. Competitions, painting, public speaking on women's issues 2 per year per village — Rs. 30,000

d. Travel for women for other project sites — Rs. 50,000

6. a. Production of Audio Visuals for 2 audio visuals of 22 minutes each @ Rs.1.5 lakhs per production — Rs. 3,00,000

b. Production of posters, pamphlets — Rs. 25,000

7. Conduct of meetings of Women's Discussion Group at the head office @ Rs.5,000 per meeting for 4 meetings — Rs. 20,000

8. One resource person (women) per village for co-ordinating all village based gender activity - @ Rs.700 per month — Rs. 42,000

Total Rs.12,98,000

Resources required for subsequent years (total for the first year - the budget for the training i.e. Rs.12,98,000-4,86,000) — **Rs. 8,00,000 per year**

Therefore, for the remaining four years (Rs,8,00,000 * 4) — **Rs.32,00,000**

Therefore grand total for five years (Rs.12,98,000 + 32,00,000) Rs.44,98,000

ANNEX 12 - CASH FLOW FOR NEW AND RE-VITALISED BOREWELLS

YEAR	NEW WELLS	REVITALISED WELLS	COST IN NLG
I	50	4	2,47,104
II	330	46	16,77,456
III	1500	150	74,84,400
IV	1760	150	87,19,120
V	1760	150	87,19,920
TOTAL	5400	500	268,47,000

NGO CONTRACT AND TRAINING BUDGET (IN ~~NGO~~ Rs.)

5/3/9

S.No.	ITEM	YEAR 1 ‡	YEAR 2 ‡‡	YEAR 3 ‡‡	YEAR 4 ‡‡	YEAR 5 ‡‡	TOTAL
1	TRAINING						
a	IDC's MANAGEMENT & STAFF	39500	173800	191180			404480
b	DFC's & NGO STAFF	56444	248354	273189			577987
c	WATER USER'S GROUP	1334118	5870119	6457131	7102844	7813129	28577341
d	STUDY TOURS	78933	347305	382036			808274
e	TRAINER'S TRAINING	7265	31966	35163	38679	42547	155619
f	TRAINING MATERIALS		1980000	2178000	2395800		6553800
	SUB TOTAL						37077501
2	NGO CONTRACTS						
a	SITE SELECTION (6 DISTRICTS)	1200000	1320000				2520000
b	DISTRICT FIELD CO-ORDINATORS INCLUDING SUPPORT FACILITIES	60000 1DFC/3MNTHS	264000 1DFC/12MNTHS	871200 3DFC'S/12MNTHS	958320 3DFC'S/12MNTHS	1054152 3DFC'S/12MNTHS	3207672
c	COMMUNITY ORGANISERS	50400 4CO'S/3MNTHS	221760 4CO'S/12MNTHS	3880800 70CO'S/12MNTHS	4268880 70CO'S/12MNTHS	4695768 70CO'S/12MNTHS	13117608
d	PROCESS DOCUMENTATION	300000	330000				630000
	SUB TOTAL						19475280
3	GENDER	1298000	880000	968000	1064800	1171280	5382080
	SUB TOTAL						5382080
4	WORKSHOPS / CONFERENCES						
a	WORKING MEETINGS	12000	26400	29040	31944	35138	134522
b	DISTRICT ADVISORY COMMITTEE	1500	3300	3630	3993	4392	16815
c	CONFERENCES	30000	33000	36300	39930	43923	183153
	SUB TOTAL						334491
5	TRAVEL ALLOWANCE	150000	660000	726000	798600	878460	3213060
	SUB TOTAL						3213060
6	VEHICLE(1)	400000					400000
	SUB TOTAL						400000
	TOTAL	4996160	12174404	15562188	16187362	15170718	65882412
7	UNSPECIFIED						8877588
	GRAND TOTAL						74760000

‡ PROJECT YEAR APRIL 1-MARCH 31
‡‡ INFLATION AT 10% PER ANNUM

A N N E X (IN NLG)				
DGIS CODE	PROPOSAL	ENTITLEMENT	ESTIMATE	SAVINGS
305	STAFFING (ANNEX 1)	86000	46000	40000
403	TRANSPORT EQUIPMENT (ANNEX 1)	20000	6000	14000
530	TRANSPORT (ANNEX 1)	21960	7000	14960
490	GPS RECEIVERS (ANNEX 2)	15000	0	15000
490	GPS BASIC STATION (ANNEX 2)	20000	0	20000
430	CAR		16500	-16500
305	O & M CAR		7000	-7000
	TOTAL	162960	82500	80460

10. In close coordination with the BKH, GWD and NGO staff, initiate and guide the implementation of items 5 to 9 above

11. Identify the gender integrated development (GID) related training needs of male and female farmers, and staff of cooperating institutions at field, district and state level, in consultation with the Training Co-ordinator (TC). Support the TC in identifying appropriate training institutes or resource people and assist on module development and in training.

12. Identify, in discussion with M&E staff, field staff and women and men farmers, appropriate monitoring indicators for baseline and routine monitoring studies and evaluation and advise on appropriate monitoring procedures. Develop, in consultation with other concerned staff, a strategy, method and indicators for process documentation and/or special studies of water users' participation activities.

13. Take the lead in the formulation and conduct of Participatory Rural Appraisal (PRA).