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MINUTES OF DISCUSSIONS
ON
THE SOILS RESEARCH AND DEVELOPMENT CENTER PROJECT
IN
THE REPUBLIC OF THE PHILIPPINES.

In response to the request of the Government of the Republic of the Philippines, the Government of Japan desired to conduct a preliminary study on the Soils Research and Development Center Project (hereinafter referred to as the "Project") and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA dispatched the Preliminary Survey Team to the Republic of the Philippines, headed by Dr. TATSUJI TAKAHASHI, Director of Research Department I, Tropical Agriculture Research Center, Ministry of Agriculture, Forestry and Fisheries, hereinafter referred to as the "Team" from 22nd of November 1988 to 3rd of December 1988.


The team had a series of discussion with the authorities concerned of the Government of the Republic of the Philippines and carried out field survey.


As the result of the discussions and field survey, both sides have agreed to recommend to their respective Governments to take further steps for early implementations of technical cooperation for the Project based on tentative framework attached as Annex I.

Detailed activities are attached as Annex II.

Members' list of both sides is attached as Annex III.

December 1st, 1988


DR. TATSUJI TAKAHASHI
Team Leader
The Preliminary Survey Team
JICA


MR. GODOFREDO N. ALCASID, JR.
Director
Bureau of Soils and Water
Management
Department of Agriculture

TENTATIVE FRAMEWORK OF TECHNICAL COOPERATION
on the
SOILS RESEARCH AND DEVELOPMENT CENTER PROJECT
in the
REPUBLIC OF THE PHILIPPINES

I. TENTATIVE FRAMEWORK

1. OBJECTIVES OF THE PROJECT

The project is to be carried out in the Soils Research and Development Center (presently the Bureau of Soils and Water Management, Department of Agriculture) for the purpose of supporting economic recovery and progress and increasing agricultural productivity and profitability through developing and propagating applicable soils research and farm technology.

2. PHILIPPINE AGENCY IN-CHARGE FOR THE PROJECT

The Bureau of Soils and Water Management, Department of Agriculture, after completion, the Soils Research and Development Center.

3. SITE OF PROJECT

The Soils Research and Development Center

4. DURATION OF TECHNICAL COOPERATION

Five (5) years

5. ACTIVITIES OF COOPERATION

- (1) To expedite the soil survey
- (2) To accelerate the land evaluation system
- (3) To accelerate the Soils and Fertilizers research
- (4) To expedite measures of Soil Conservation
- (5) To conduct agricultural extension training

6. MEASURES TO BE TAKEN BY THE JAPANESE SIDE

(1) Dispatch of Experts

Japanese long-term experts are as follows:

- (1) Team Leader
- (2) Coordinator
- (3) Expert in the fields of:
 - a. Soil Survey
 - b. Land Evaluation
 - c. Soils and Fertilizers
 - d. Soil Conservation
 - e. Agricultural Extension Training

NOTE: Short-term experts in Data Processing, Remote Sensing, Cartography, Water Conservation Management and in other fields shall be dispatched as the need arises for the smooth implementation of the project.

(2) Acceptance of Counterpart Personnel

Acceptance annually of 2 to 4 Philippine counterparts in Japan during the Cooperation period.

(3) Provision of Equipment

Necessary equipment and materials for implementation of the Project shall be provided within budgetary limitation.

7. MEASURES TO BE TAKEN BY THE PHILIPPINE SIDE

- (1) Provision of land, building facilities needed for the implementation of the Project
- (2) Assignment of full-time counterparts and other administrative personnel
- (3) Firm budgetary allocation for the implementation of the Project

8. JOINT COMMITTEE

(1) Members

- a. Chairman
Secretary, Department of Agriculture or his designated representative

J. H. Acuña 9.9.

b. Philippine Side

- (a) Undersecretary for Regional Operations, Department of Agriculture
- (b) Assistant Secretary for Production Group, Department of Agriculture
- (c) Assistant Secretary for Foreign-Assisted Projects, Department of Agriculture
- (d) Assistant Secretary for Planning and Monitoring group, Department of Agriculture
- (e) Assistant Secretary for Research and Training, Department of Agriculture
- (f) Director of Bureau of Soils and Water Management (Executive Director, Soils Research and Development Center), Department of Agriculture
- (g) Director of External Assistance Unit, National Economic and Development Authority
- (h) Representative of University of the Philippines
- (i) Representative of National Irrigation Administration
- (j) Other personnel appointed by the Chairman

c. Japanese Side

- (a) Team Leader
- (b) Coordinator
- (c) Experts
- (d) Resident representative of JICA Philippine Office

J. L. Cruz

9.9.

- (e) Personnel concerned to be dispatched by JICA Head Quarter, if necessary

NOTE: Representative of Embassy of Japan may attend as observer.

(2) Functions

- (1) To formulate annual plans.
- (2) To review/confirm the Project activities.
- (3) To review and exchange views on major issues.

(3) Meetings

At least once a year and whenever necessity arises.

II. OTHERS

1. The Philippine side strongly insists on providing for computer facilities and remote sensing equipments in the Soils Research and Development Center to the Japanese Team. The Preliminary Survey Team recognizes the importance of the activities of Remote Sensing and Soil Information System.
2. The Preliminary Survey Team and the Bureau of Soils and Water Management jointly expressed their desire for mutual cooperation for the successful implementation of the Project.

J. H. Alarcon

DETAILED ACTIVITIES

1. Soil Survey
 - (1) Soil survey and classification
 - (2) Standardization of soil chemico-physical analysis for soil survey
 - (3) Remote sensing
 - (4) Cartography
 - (5) Others
2. Land Evaluation
 - (1) Soil suitability for agricultural land use
 - (2) Soil information system
 - (3) Others
3. Soils and Fertilizers
 - (1) Soil fertility research, i.e. relationship between soil properties and crop growth
 - (2) Improvement of soils
 - (3) Fertilizer use and management
 - (4) Others
4. Soil Conservation
 - (1) Appropriate farming system for soil erosion control
 - (2) Water conservation management
 - (3) Others
5. Agricultural Extension Training, Development of Curricula and teaching materials
 - (1) Updating soil chemico-physical analysis for Center technical staff
 - (2) Training for satellite technical staff
 - (3) Others

J. A. ...
J. J.

(1) The Philippine Side

1. GODOFREDO N. ALCASID, JR.
Director/Executive Director/PMO
Soils Research and Development Center
2. REYNALDO P. BAJAR
Deputy Executive Director/PMO
Soils Research and Development Center
3. NESTOR M. TICZON
Technical Operations Officer/PMO
Soils Research and Development Center
4. CONSTANCIA R. GANTIOQUI
Laboratory Services Officer/PMO
Soil Research and Development Center
5. ELSIE A. BALAGTAS
Finance Officer/PMO
Soils Research and Development Center
6. ALEJANDRO B. MICOSA
Land Use and Remote Sensing Specialist/PMO
Soils Research and Development Center
7. RODOLFO M. LUCAS
Chief, Water Resources Management Division
Soil Research and Development Center

(2) The Japanese Side

1. TATSUJI TAKAHASHI I
Director, Research Department
Tropical Agriculture Research Center
Ministry of Agriculture, Forestry and Fisheries
2. SHOICHI TOKUDOME
Chief, Land Evaluation Laboratory
National Institute of Agro-Environmental Sciences
Ministry of Agriculture, Forestry and Fisheries
3. MASAO TAKAI
Section Chief, International Cooperation
Economic Bureau
Ministry of Agriculture, Forestry and Fisheries

J. P. Alcala

J.P.

4. KUNIHIRO DOI
Section Chief, Design Division
Agricultural Structure Improvement Bureau
Ministry of Agriculture, Forestry and Fisheries
5. EISAKU KOMORI
Chief of Research Section
Crop Production Division
Agricultural Production Bureau
Ministry of Agriculture, Forestry and Fisheries
6. HITOSHI GOTO
Staff, Technical Cooperation Division
Agricultural Development Cooperation Department
Japan International Cooperation Agency

J. L. O'Connell

ミニッツにおける主変更点 (その1)

長期専門家

旧

Team leader

Coordinator

Expert in the fields of

a. Soil Survey

b. Soil Conservation and Management

c. Soil and Fertilizers

d. Water Management

e. Agricultural Extension and Training

ミニッツにおける主変更点 (その2)

短期専門家

新

Team leader

Coordinator

Expert in the fields of

a. Soil Survey

b. Land Evaluation

c. Soil and Fertilizers

d. Soil Conservation

e. Agricultural Extension Training

旧 Short-term experts will be dispatched when necessity arises for the smooth implementation of the project.

新 Note : Short-term experts in Data-Processing, Remote Sensing, Cartography, Water Conservation Management and others

変更点（アンダーライン部分）の変更理由を述べる。

①Land Evaluation

本研究はその基本において土壌図の作製であり、かつ、それは土壌の Capability Mapをも含むことが必要であると認識された。したがって、従来の討議の結果、この部分に相当する専門家がSoil Survey 1名のみということは、この基本に関して弱体に過ぎる。あるいは3名とすることが望ましいと考えられたが、日本国内におけるこれに関する専門家の層が薄く、2名とすることが現実的である。

②Soil Conservation

現状における先方の組織が、土壌・水管理局であり、現在は小面積灌漑（50ha以下）のための小型ダム建設を業務の一部としている。またこの業務は組織改変後も引き継がれるという。本件に関し、長期専門家により灌漑に関する土壌特性（主として物理性）を検討せしめる。

③Agricultural Extension Training

従来の項目では、Regional Officeに所属する普及員の訓練の意味が本項にあったと理解する。しかしこの普及員総数は、フィリピン全土で10,000名に及ぶという。これらに対する教育はその人数の多さからして意味がない。しかし、無償に含まれる機材からして、Regional Officeでは簡単な土壌の化学分析が可能（土壌pH, N, P, K等）と判断され、現行のRegional Officeの状況からして、先方のこれら機材の使用法およびデータの解析の能力は低いと判断した。したがって本項においてはRegional Officeの関係職員に、これらについてのトレーニングを実施することを最初の目標とする。なお、分析者は各項目について、2名を想定し、全国をカバーするため、トレーニングを受ける人員は150名強が想定される。期間は1項目について約1ヵ月、計10週間以上となる。これに続いて、データ解析についてのトレーニングが必要で、人員は約1/3でよいものの、訓練期間はより長期になると思われる。各訓練の間には、マニュアルの設定が必要となるため、ほぼ、これらの基本的訓練は1年間を見込むことが必要である。

以上により、初期の段階から第Ⅱフェーズの研修棟は有効に利用され得るし、また必要不可欠と考える。なお、上記の訓練終了後も、後述するように業務の進展に応じて他の訓練を追加する必要があるとともに、土壌・水管理局本部の職員の訓練も必要と考えている。したがって研修棟の必要性はこれ

以後も高い。

④短期専門家について

専門家の担当すべき職分を明確化した。新たに記載した項目を説明すれば下記のようなものである。

Data Processing：土壌評価，土壌情報システムの確立 に対応。

Remote Sensing：土壌調査，リモートセンシング技術の確立 に対応。

Cartography：土壌調査，地図作製法 に対応。国内試験研究機関に該当者なし。民間等。

Water Conservation Management：土壌保全，水保全管理に対応するが，かなり農業土木的で小灌漑溜池のダム設計等に対応する。

質 問 事 項

I. フィリピンにおける土壌の研究・開発等の現状と計画

1. 現状と計画

- (1) 土壌の調査と研究
- (2) 土壌主題図
- (3) 作付体系
- (4) 営農システム
- (5) 水利用
- (6) 土壌研究・開発に係る研修・普及

2. 1. (1)～(6) に関する研究開発機関

3. 1. (1)～(6) に関する利活用の現状と計画

4. 1. (1)～(6) に関する関係機関間の連携の現状と計画

5. 第3国（国際機関を含む）の同分野における協力の現状

II. 国家開発計画等における位置付

1. 開発計画と土壌の研究・開発の関係

2. 開発計画（①中期経済開発計画 ②農業開発計画 ③その他）とプロジェクトの関係

3. プロジェクトの開発計画への利活用

III. 土壌研究・開発センター（現、土壌・水管理局）の現状

1. 活動・研究状況（具体的に）

2. 配置人員（①資格 ②地位 ③分野 ④人数）

3. 現有機材名

4. 活動予算額とその内訳

IV. プロジェクト実施体制

1. 開発計画及び農業開発計画との関連で本プロジェクトの年次別実施計画

2. 協力期間を5ヶ年と設定した具体的理由

3. 実施機関の組織及び事業概要並びに予算

4. プロジェクトの組織及び要員計画

- (1) C/Pの配置計画 (①地位 ②専門性 ③担当分野の専・兼の区別)
- (2) プロジェクトの全責任者は
- (3) プロジェクトヘッド (部分的責任者) は
- (4) C/Pの給与額、民間技術者との給与水準の比較
- (5) (713-671) 42名の増員計画

5. プロジェクトの予算計画

- (1) 農業省の過去3ヶ年の予算額
- (2) プロジェクト年間運営費 (1989年及び今後5ヶ年)
- (3) プロジェクト運営に必要なローカルコストの展望
- (4) リモートセンシングの入手に係る予算措置

6. プロジェクト実施に係る関係機関との連携

- (1) 土壌データ及びリモートセンシングデータの入手ルートと入手先との連携の現状と計画
- (2) 国家かんがい庁等との協力体制
- (3) 他土壌調査機関及びリモートセンシング技術関係機関 (①機関名 ②技術的関連)

7. その他

- (1) 既収集のランドサットSPOT等リモートセンシングデータの地域、データ数
- (2) 既収集の航空データ、土壌図、地形図等の地域データ数

V. フィリピン土壌研究開発センター計画の実行計画

1. 協力課題別実行計画
2. 専門家派遣計画 (希望短期専門家の専門家とその理由)
3. 研修員受入計画 (希望分野、年4名程度)
4. 機材の現状と計画 (主な希望機材)
5. 専門家の活動場所 (ROOM) の確保及びFULL TIME COUNTERPART の確保 (①名前、②学歴等)
6. 技術移転の成果をいかなる組織、資金にて活用していくか
7. 州・県レベルでのセンターの成果の利・活用の連携

QUESTIONNAIRE

This questionnaire has been prepared to facilitate the formulation of new cooperation projects. Please give information on each point and provide the relevant data and materials where possible.

I. Present Circumstances of Soil Research and Development

1. Present Circumstances of activities and plans concerning

- (1) Soil research and development
- (2) Soil thematic map
- (3) Cropping mix systems
- (4) Water utilization
- (5) Farming systems
- (6) Training on soil research and development

2. Concrete organization in connection with 1. (1) through (6) above.

3. Plan for utilization in connection with 1. (1) through (6) above.

4. Present circumstances of and plans for cooperation among relevant organizations, in connection with 1. (1) through (6) above.

5. Present circumstances of cooperation of other countries (including international organizations) in this field.

II. Position of National Development Program

1. Relation between development program / plans and Soil Research and Development.

2. Relation between development program / plans (i) Middle Economic Development Plan, (ii) Agricultural Development Plan and the Project.

(1) Actual utilization of the results of the Agricultural Product national development projects.

(2) Plan for utilization of the Projects for national development projects.

III. Present situation of Soil Research Development Center

1. Detail description of research and operations.

2. Assigned employees (qualifications, positions, sectors, and number)

3. Names of equipment items and materials currently in use.

4. Budget for the operations, and its breakdown.

IV. Soil Research and Development Project Cooperation Implementation System

1. Project implementation schedule by years, planned in relation to agricultural and regional development projects.
2. Reasons in detail for why the term of cooperation has been set for five years.
3. The organization and an outline of the operations of the implementation agencies (including an outline of group operations in the case of Soil Research and Development Center), and their budgets
4. Organization and Personnel Plan for the Project
 - (1) Allocation plan for counterparts. (posts, expertise, and allocation whether in full or in part)
 - (2) Who will bear overall responsibility for the implementation of the Project ?
 - (3) Who will be responsible for the administrative and managerial matters of the Project ?
 - (4) Pay of counterparts, and comparison of their pay level with that of private engineers.
 - (5) Annual Plan of increasing staff.

5. Budget for the Project

(1) The budget for Department of Agriculture in the past three years.

(In the categories of operation expenses and administration expenses.)

(2) Annual operation and management expenses for the Project.

(Operation expenses, management expenses, costs for purchasing equipment components and materials, etc. for the year 1989 and the following 5 years.)

(3) Prospects for budget to cover local costs necessary for the implementation of the Project.

(4) Availability of budget for obtaining Landsat MSS, T/M and SPOT data.

6. Cooperation with other agencies for the implementation of the Project

(1) Channels through which Landsat MSS, T/M and SPOT data are obtainable, and the present situation and future prospects of cooperation with the data supply sources.

(2) Cooperation with the National Irrigation Administration, etc.,.

(3) Present situation regarding use of the thematic soil maps and agricultural land utilization thematic maps drawn by Soil Research and Development Center by other bureaus, sections, centers or agencies of the Department of Agriculture.

(4) Cooperation with other agencies relative to soil research and remote sensing technology.

7. Others

(1) Areas covered by Landsat MSS, T/M and SPOT data collected heretofore, and quantities of such data.

(2) Quantities of regional data including aeronautic data, topographical maps and swamp land maps collected heretofore.

V. Basic Design and Implementation Plans for Soil Research and Development Center Project.

1. Implementation plans by subjects of cooperation.
2. Expert dispatch plans. (Desired fields of ~~expertise~~ of short-term experts and the reasons)
3. Acceptance of counterpart personnel plans. (Desired fields of activities. Two to three participants annually)

4. Present circumstances of equipment and materials, and plans relating to them for the future. (Main desired equipment and materials)
5. Present condition of buildings and facilities. (to accomodate experts and for their work)
6. Firm arrangement of full time counterpart
(① definite name, ② present post, ③ school career)
7. Plan for utilization of technical cooperation effect.
8. Relationship between Soil Research and Development Center and Regional and Provincial Soil Laboratories. (organization chart)

I. Present Circumstances of Soil Research and Development

1. Present circumstances of activities and plans concerning:

(1) Soil Research and Development

Soil Research and Development activities and plans of the BSWM adheres with the research and development goals of the Department of Agriculture which is to increase farm productivity and income which focuses its thrust on:

- a. Development, rehabilitation, conservation, utilization and management of soil and water resources and ecosystems.
- b. Integrated and community-based approaches towards better food production and nutrition and balanced ecosystems.
- c. Biotechnology in production system
- d. Effective and efficient technology transfer systems using soil classification.
- e. Support to emergency projects.

(2) Plan for utilization in connection with thematic maps

Thematic maps produced in the BSWM are requisites in planning for agricultural development and watershed management. These are in great demand by such agencies as the NEDA, NIA, NACIAD, DA, non-government offices and others.

The BSWM maintains reproducible copies on transparencies (sepia or herculene) but the bottleneck is in coloring. A medium size province may consist of 20-30 map sheets at 1:50,000 scale. Multiply this by the number of provinces, and number of copies and we can imagine the volume involved.

With regard to the R & D the target clientele are the farmers particularly the small ones. To align our efforts with national development goals, the prioritization as set up by BAR, PCARRD and NEDA are under 3 categories:

- a. Priority Development Zones which is ranked as follows:
 1. Hilly upland

2. Upland plains
3. Lowland rainfed
4. Lowland Irrigated
5. Inland Waters
6. Coastal Brackish Areas

The hilly lands are the major concern for development. The water management technology for hilly land and upland crop-based farming system remains to be wanting for so long time.

(3) Cropping Mix Systems

In support to the HADP where there are targeted 27,000 farmer beneficiaries in the cool highlands of Mountain Province and Benguet both located in Luzon, the Soil and Land Resources Evaluation Division forms a basic document for the identification and location of project and cropping mixes based on soil and agro-climatic characteristics. Cropping mixes involves:

- (i) Crop rotations of seasonal crops with legumes and vegetables to make full use of available water (natural rainfall with 75% probability)
- (ii) Multi-Storey cropping or combination of tall canopy crop with 2 or more shade tolerant ones or of deep-rooted with shallow-rooted crops. It is a form of very intensive land use raising farmers' profitability and productivity.

Research activity concerning cropping mixes aims to determine the effect of cropping system on soil fertility.

I. Present Circumstances of Soil Research and Development

I - 1.4 Water Utilization

INTRODUCTION

Agriculture plays a vital role in our economy. An estimated 70 percent of our population depends on agriculture for their livelihood. Improving the production of our upland rainfed areas to raise the income level of our farmers will no doubt contribute to the alleviation of the tight economic situation we are in today.

There are approximately 10 million hectares classified as arable out of the 30 million hectares total land area of the Philippines. Only about one third of the arable lands are level to nearly level, the rest undulating to rolling in topography. As of 1987, NIA reported that only 1.34 million hectares are irrigated out of the total potential irrigable area of 3.12 million hectares which means that irrigation development is only 43 percent nationwide. Water, which is a very vital factor of production, is therefore a problem in most of our arable lands for year-round production. The productivity of rainfed areas can be maximized and more lands may be opened if there is a promise of reliable water supply to support crop production and other farming activities.

The construction of water impounding projects have always been recommended as one of the mechanical measures to conserve soil and water by the Bureau of Soils and Water Management to carry out the general objective of promoting effectively the maximum utilization and conservation of the soil and water resources of our country.

The potential of small water impounding projects is great because of the predominantly rolling to hilly topography of the country. The depressions and inland valleys in between hills in the upland areas are ideal sites for small water impounding dams and the construction of these in the rainfed areas to provide irrigation water will enhance agricultural development of these areas.

ACCOMPLISHMENTS :

The Bureau of Soils and Water Management has, as of December 1987 constructed 89 projects with a 3,744.80 hectares service area and watershed area of 18,024.44 hectares all over the country. The total number of farmer beneficiaries is 1,726. The list of completed projects by region is presented in the succeeding tables. Additional five (5) projects are currently undergoing construction and are expected to be finished within next year.

The completed projects were either funded by the farmers themselves, or with funding support from the Department of Agriculture, NFAC, NEDA, the SWIM Program thru MPWH, or the World Bank as in the case of the projects constructed under the KABSACA Project in Iloilo.

There are also 151 small water impounding projects with feasibility studies ready for implementation located in the different region of the country. These projects are programmed for implementation within the next seven (7) years.

The Bureau of Soils and Water Management also has started to engage in the institutional development of the farmer beneficiaries of water impounding projects. The farmers are formally organized into Associations or Cooperatives and are given a series of leadership trainings and technical skills to operate and maintain the water impounding systems. They are taught how to identify their needs, find solution to their problems and see how they can help in the improvement of their community.

They are encouraged to participate in the planning and implementation of priority projects which they themselves identified for the good of the system.

Sixteen (16) water impounding projects in Iloilo under the Rainfed Agricultural Development Project (RADIP) funded by the World Bank from 1981-1985 had started the institutional development of the farmer beneficiaries last year and is continuing.

In Luzon, we have started on four (4) pilot projects in Isabela, Nueva Vizcaya and Ilocos Norte. While in Mindanao, we have started institutional work in two (2) projects, one in Bukidnon and the other in Davao del Norte.

We hope to expand this activity because we believe that the farmers (beneficiaries) are potential partners in development and comprise a vast resource that needs only to be tapped and motivated towards the realization of the development objectives of the government.

SUMMARY OF COMPLETED WATER IMPROVING PROJECTS
BSM AS OF 1967

Location	No. of Project	Total Service Area	Total Watershed Area	Pond Area	No. of Rainers Benefitted	Project Cost	Remarks
1	6	343 has	874 has	13.52 has	234	P 1,693,628.00	
2	9	662.5	1,160	36.90	131	4,682,532.10	
3	7	212	394	12.32	67	2,255,763.35	
4	1	18	30	2.0	1	93,242.10	
5	2	240	24	-	25	181,796.00	
6	18	851	1,160	41.90	359	12,301,801.19	
7	35	284.25	717.66	49.57	100	1,752,866.00	
8	6	272	823.78	15.020	96	3,066,744.70	
9	3	737.30	12,502.00	-	409	1,256,889.00	
10	1	125	300	-	250	90,000.00	
11	1	60	39	2.5	54	2,106,954.06	
12							
GRAND TOTAL	89	3,804.80	18,024.44	173.73	1,726.00	P 29,482,216.06	

LIST OF (N-GOING PROJECTS)

Project Name	Location	Service Area	Watershed Area	Pond Area	Dam Length	Dam Height	Kind of Structure	Farmers Benefited	Project Cost	Remarks
1. Bactay	Bacsay Luna, Kalinga, Apayao	60	56	12	82	11.75	earthdam	25	1,203,369.30	BS-SMIM
2. Kadungilan	Kadungilan, Pikit North Cotabato	50	35	4.1	110	6	earthdam	80	1,257,450.00	BS-SMIM
3. Cagpuren	Cagpuren, Lacang Northern Samar	75	51.2	-	15	4.70	concrete	25	900,000.00	BS-SMIM
4. Cabanglasan	Cabanglasan, Nukitchon	80	292	2.60	205	14.50	earthdam	160	2,500,000.00	BS-SMIM
5. Calangpagan II	Ubay, Bohol	75	350	5.5	71.8	12.5	earthdam	120	4,120,000.00	BS-SMIM

SUMMARY OF PROPOSED PROJECT BY REGION
 (Projects with Feasibility Studies)
 BSN 198

REGION	NUMBER OF PROJECTS	SERVICE AREA (ha.)	WATERSHED AREA (ha.)	POND AREA (ha.)	PROJECT COST * (P'000)
I	28	1,560	2,934.32	129.52	49,378.55
II	31	1,966	4,355.25	142.40	49,530
III	17	1,638.3	4,506.52	152.76	35,476
IV	5	273	212.7	17.39	8,279
V	5	250	247.13	18.73	6,093
VI	8	390	464.5	17.55	9,285
VII	13	869.40	700.44	29.52	13,533
VIII	9	556	481.08	30.78	15,100
IX	7	600	474.96	16.35	9,831
X	10	1,405	863.20	42.42	14,340
XI	9	795	1,746.50	39.55	17,870
XII	9	1,460	906.25	62.09	17,762
TOTAL	151	11,792.70	17,892.8	699.06	246,477.55

* Includes costs of dam & appurtenances, distribution system, construction, supervision and watershed development.

(5) Farming Systems

The BSWM through the ALMED presently undertakes some studies and analyses of the present farming systems in the different regions of the country. This activity is part of the ongoing land use assessment for agro-environmental development and investment. As of this writing, one region of the country (Region XI) is already finished and two or more are slated for presentation before the year ends.

The purpose of this activity is to identify the preponderant farming systems existing and to find out if there are integrations in the farm enterprises e.g. crop-crop, crop livestock, crop fishery, etc.

The whole country is targeted to be covered by next year, 1989. Data will be continually updated as dictated by needs and the prevailing technology.

OPERATION NETWORK

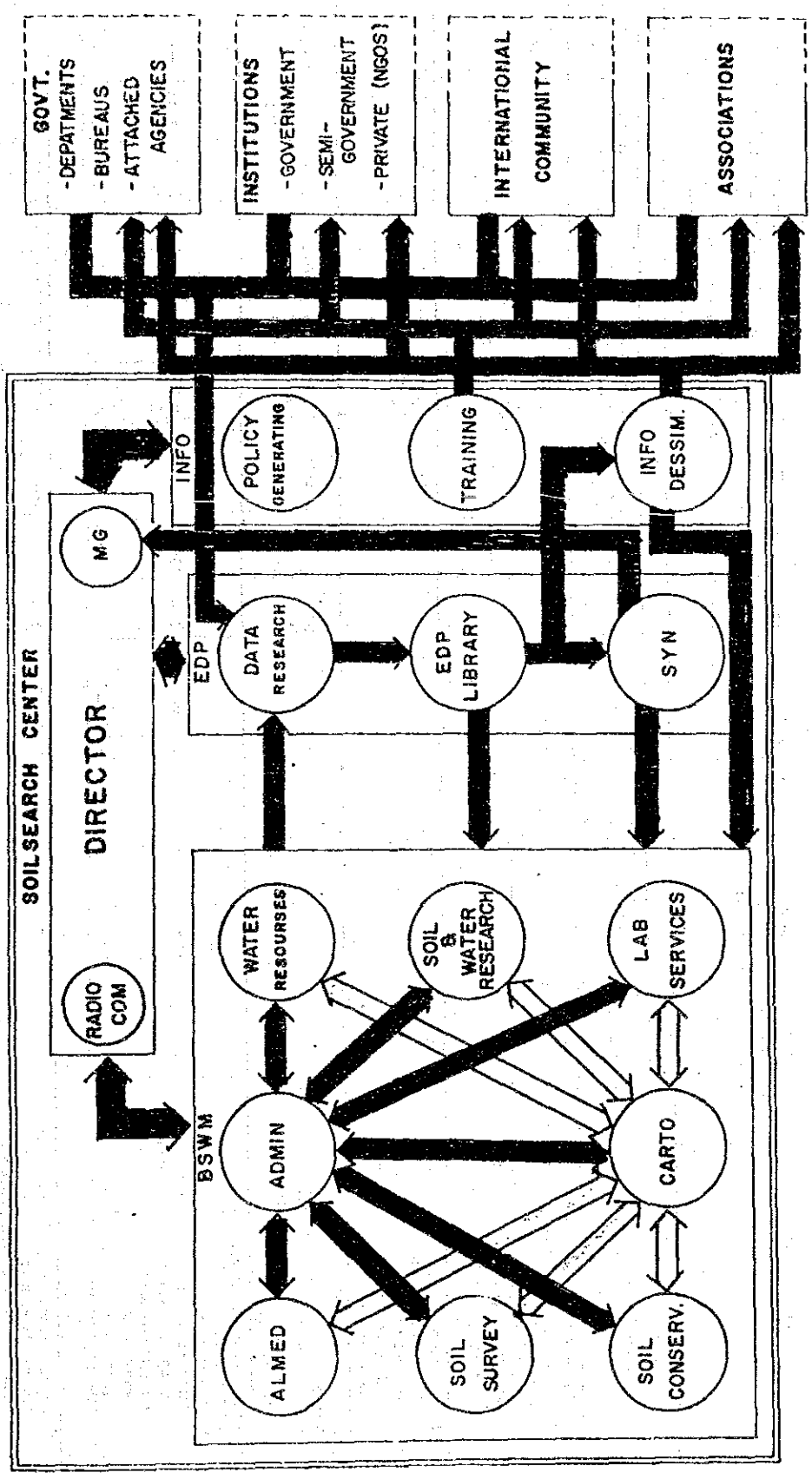


Table 3-3-1. Training Program of the Center

Note: L Level: 1A-Center Personnel: Supervising and senior researchers
 1B - Junior researchers and technicians
 1C - Supervising and senior technical staff
 1D - Junior technical staff
 1E - Maintenance

2 - Regional Dept. of Agriculture soil research planners and implementers, extension workers
 3 - Farmer leaders, private agri.-business groups, students and researchers from educational and research institutions

1. Figures in parentheses indicate that more than one (1) level of participants are trained at the same time.
 2. Courses with asterisks (*) are recommended to be included under the Technical Cooperation.

Training Course	Source of Trainees	Year I			Year II			Year III			Year IV			Year V		
		Level of Trainees	No. of Trainees	Duration	Level of Trainees	No. of Trainees	Duration	Level of Trainees	No. of Trainees	Duration	Level of Trainees	No. of Trainees	Duration	Level of Trainees	No. of Trainees	Duration
1. Soil Survey Method 1. Aerial Photogrammetry (on-the-job): Theories on aerial photogrammetry, use of steream plotter, mapping and interpretation.	Cartography Soil Conservation Survey ALMED Research	1A, 1C	5-10	1 mo.	1A, 1B 1C, 1D L-2	12 11-15	3 mo.	1A, 1B 1C, 1D L-2	12 11-15	3 mo.	1A, 1B 1C, 1D L-2	12 11-15	3 mo.	1A, 1B 1C, 1D L-2	12 11-15	3 mo.
		1A, 1B 1C L-2	20 25 11-15	3 wks	1A, 1B 1C, 1D L-2	20 25 11-15	3 wks	1A, 1B 1C, 1D L-2	20 25 11-15	3 wks	1A, 1B 1C, 1D L-2	20 25 11-15	3 wks	1A, 1B 1C, 1D L-2	20 25 11-15	3 wks
2. Soil Taxonomy: Course includes lectures and field work. Techniques in monolith preparation.	Soil survey Research Conservation ALMED	1A, 1B 1C L-2	13 12 11-15	2 wks	1A, 1B 1C, 1D L-2	13 12 11-15	2 wks	1A, 1B 1C, 1D L-2	13 12 11-15	2 wks	1A, 1B 1C, 1D L-2	13 12 11-15	2 wks	1A, 1B 1C, 1D L-2	13 12 11-15	2 wks
		1A, 1B 1C L-2	13 12 11-15	2 wks	1A, 1B 1C, 1D L-2	13 12 11-15	2 wks	1A, 1B 1C, 1D L-2	13 12 11-15	2 wks	1A, 1B 1C, 1D L-2	13 12 11-15	2 wks	1A, 1B 1C, 1D L-2	13 12 11-15	2 wks
II. Analytical Laboratory Methods 3. Soil Plant Tissue, Irrigation Water and Fertilizer Materials.	Research Lab. Service Region	1A, 1B 1C L-2	13 12 11-15	2 wks	1A, 1B 1C, 1D L-2	13 12 11-15	2 wks	1A, 1B 1C, 1D L-2	13 12 11-15	2 wks	1A, 1B 1C, 1D L-2	13 12 11-15	2 wks	1A, 1B 1C, 1D L-2	13 12 11-15	2 wks
		1A, 1B 1C L-2	13 12 11-15	2 wks	1A, 1B 1C, 1D L-2	13 12 11-15	2 wks	1A, 1B 1C, 1D L-2	13 12 11-15	2 wks	1A, 1B 1C, 1D L-2	13 12 11-15	2 wks	1A, 1B 1C, 1D L-2	13 12 11-15	2 wks
III. Methods for Instrumental Operations *3. Operation and maintenance of special lab. equipment for chemical analysis; gas/liquid chromatograph. Auto-analyzers, atomic spectrophotometer, etc.	Lab. Services Research Maintenance	1A, 1E	5	1 mo.	1A, 1B 1C L-2 1E	13 12 11-15	1 mo.	1A, 1B 1C L-2 1E	13 12 11-15	1 mo.	1A, 1B 1C L-2 1E	13 12 11-15	1 mo.	1A, 1B 1C L-2 1E	13 12 11-15	1 mo.
		1A, 1E	5	1 mo.	1A, 1B 1C L-2 1E	13 12 11-15	1 mo.	1A, 1B 1C L-2 1E	13 12 11-15	1 mo.	1A, 1B 1C L-2 1E	13 12 11-15	1 mo.	1A, 1B 1C L-2 1E	13 12 11-15	1 mo.
*3. Operation and maintenance of special lab. equipment for soil physics; X-ray diffractometer for mineralogical studies, moisture volume tester soil aggregate analyzer, polarizing microscope	Lab. Services Research Maintenance	1A, 1E	5	1 mo.	1A, 1B 1C L-2 1E	13 12 11-15	1 mo.	1A, 1B 1C L-2 1E	13 12 11-15	1 mo.	1A, 1B 1C L-2 1E	13 12 11-15	1 mo.	1A, 1B 1C L-2 1E	13 12 11-15	1 mo.
		1A, 1E	5	1 mo.	1A, 1B 1C L-2 1E	13 12 11-15	1 mo.	1A, 1B 1C L-2 1E	13 12 11-15	1 mo.	1A, 1B 1C L-2 1E	13 12 11-15	1 mo.	1A, 1B 1C L-2 1E	13 12 11-15	1 mo.

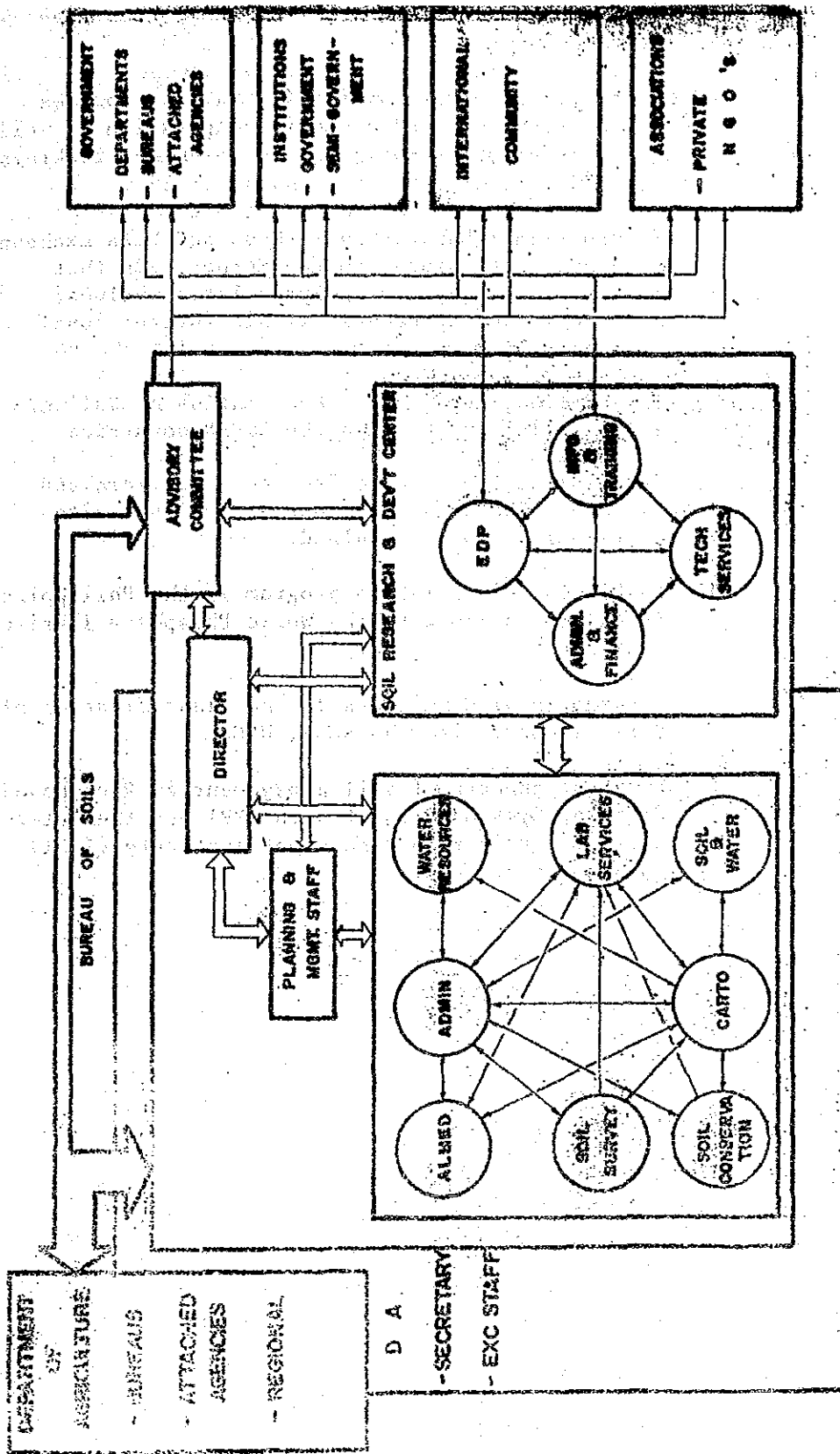
Training Course	Source of Trainees	Year I			Year II			Year III			Year IV			Year V		
		Level of Trainees	No. of Trainees	Duration	Level of Trainees	No. of Trainees	Duration	Level of Trainees	No. of Trainees	Duration	Level of Trainees	No. of Trainees	Duration	Level of Trainees	No. of Trainees	Duration
6. Operation and maintenance of special lab. equipment for biological studies: Composed microscope with photographic facility, analyzer, etc.	Research Lab. Serv. (Inoc. Prod. Maintenance)	1A, 1E	6	1wk	1A, 1B, 1E	6	1wk	1A, 1B, 1E	6	1wk	1B, 1E	6	1wk	1B, 1E	6	1wk
7. Short Course in Remote Sensing: a. Introduction to Remote Sensing b. Image interpretation and mapping c. Digital Analysis of remote sensing d. Remote sensing planning and management e. MOS-1 satellite system f. Mission observation instruments g. MOS-1 data format h. Use of MOS-1 data for various applications i. Digital processing j. Geometric correction for LANDSAT MSS data k. Application of Remote Sensing Technology for Agricultural land-use planning	ALMED Survey Conservation Cartography Research Water Res. Dev/Mgt.	1A	5	1mo	1A, 1B, 1C	15-20	1mo	1A, 1B, 1C, 1D	15-20	1mo	1A, 1B, 1C, 1D	15-20	1mo	1A, 1B, 1C, 1D	15-20	1mo
8. Cartographic Equipment Operation: Includes automated cartography, photolithography and direct reproduction process in map preparation	Cartography	1A, 1C	5-10	1mo	1A, 1B, 1C	15-20	1mo	1A, 1B, 1C, 1D, L-2	12, 15	3	1A, 1B, 1C, 1D, L-2	12, 15	3	1B, 1C, 1D, L-2	12, 15	3
9. Thematic Map Interpretation and Uses: Includes lectures, project exercises and field trips	Cartography ALMED Research Soil Conservation Water Res. Dev/Mgt. Survey				1A, 1B	30	1wk	1B, 1C, 1D, L-2	5, 20, 25	5	1B, 1C, 1D, L-2, L-3	5, 20, 25	5	1B, 1C, 1D, L-2, L-3	5, 20, 25	5

Training Course	Source of Trainees	Year I			Year II			Year III			Year IV			Year V		
		Level of Training	No. of Trainees	Duration	Level of Training	No. of Trainees	Duration	Level of Training	No. of Trainees	Duration	Level of Training	No. of Trainees	Duration	Level of Training	No. of Trainees	Duration
10. Farm Management Viability	ALMED Soil Conservation Soil Survey Water Mgt. Research Region				1A, 1B 1C L-2	28 12 TI 40	2wks	1 1 1	1A, 1B 1C L-2	23 12 TI 40	2wks	1 1 1	1A, 1B 1C L-2	15 15 TI 30	2wks	1
11. Land-Use Data Mgt. : Covers utilization of data for project development, crop zonation	ALMED Survey Conservation Water Res. Dev. Mgt. Research Cartography				1A, 1C L-2	18 12 TI 30	2wks	1 1	1A, 1B 1C L-2	13 12 TI 30	2wks	1 1	1A, 1B 1C L-2	18 12 TI 30	2wks	1
12. Technology for Soil Management 12. Soil Fertility Management and Improvement : Course includes factors aggravating soil fertility, use of indigenous materials and fertility evaluations Lectures, lab. & field exercises	Soil Conservation ALMED Research Lab. Serv. Region				1A, 1C L-2	11 24 35 TI 70	2wks	1 1 1 1	1A, 1B 1C L-2 L-3	11 24 5 TI 40	2wks	1 1 1 1	1A, 1B 1C L-2 L-3	11 24 5 TI 40	2wks	1
13. Improvement of Problem Soils for Crop Production : Discussion on distribution of acid sulfate soils, saline soils; development, properties, identification of problem soils; soil amelioration Lectures and field work	Research Lab. Serv. Soil Conservation Region				1A, 1B 1C, 1D L-2	11 24 TI 35	1wk	1 1 1	1A, 1B 1C, 1D L-2	11 24 TI 35	1wk	1 1 1	1A, 1B 1C, 1D L-2	4 36 TI 40	1wk	1
14. Organic Matter Resources in the Farm : Composting and sludge utilization for crop production Lectures and field work	Soil Conservation Research Lab. Serv. Region				1A, 1C L-2	13 12 TI 25	2wks	1 1 1	1A, 1B 1C, 1D L-2 L-3	13 12 TI 35	2wks	1 1 1	1A, 1B 1C, 1D L-2 L-3	13 12 TI 35	2wks	1

Training Course	Source of Trainers	Year I			Year II			Year III			Year IV			Year V		
		Level of Training	No. of Trainees	Duration	Level of Training	No. of Trainees	Duration	Level of Training	No. of Trainees	Duration	Level of Training	No. of Trainees	Duration	Level of Training	No. of Trainees	Duration
16. Technology for Water Utilization and Management 15. Design and construction of water impounding projects; Lectures and field visits	Water Res. Dev. Mgt. Region Research				1A, 1B 1C L-2	13 12 11 25	1mo	1	1A, 1B 1C L-2	5 20 11 25	5 20 11 25	2wks	1A, 1B 1C L-2	5 20 11 25	2wks	1
* 16. Watershed Development and Management: includes operations and maintenance of water impounding socio-eco. evaluation	Water Res. Dev. Mgt. Soil Conservation ALMIED Research Region	1A	2-3	2mos (1yr)	1A, 1B 1C L-2	13 12 11 25	2wks	1	1A, 1B 1C L-2	5 20 11 25	5 20 11 25	2wks	1A, 1B 1C L-2	5 20 11 25	2wks	
* 17. Water Resources Management	Water Res. Dev. Mgt.	1A	2-3	2mos (1yr)	1A, 1B 1C L-2	13 12 11 25	2wks	1	1A, 1B 1C, 1D L-2 L-3	5 12 8 11 25	5 12 8 11 25	2mos	1A, 1B 1C, 1D L-2 L-3	5 12 8 11 25	2wks	1
* 18. Rain Stimulation Project: Training includes use of weather sensors (computers)	Rain Stimulation	1A, 1B	2-3	2ms (1yr)	1A, 1B 1C	2-3	2mos (1yr)	1	1A, 1B 1C	2-3	2-3	2mos (1yr)	1A, 1B 1C	2-3	2mos (1yr)	
19. Technology for Fertilization Efficiency: Course includes soil and environmental factors affecting fertilizer efficiency in methods, and time of application; evaluation of fertilizer efficiency in fertility improvement and crop production	Soil Conservation ALMIED Research Lab. Service Region				1A, 1C L-2	23 12 11 35	2wks	1	1A, 1B 1C L-2 L-3	11 24 5 11 40	11 24 5 11 40	2wks	1A, 1B 1C L-2 L-3	11 24 5 11 40	1mo	1

Training Course	Source of Trainees	Year I			Year II			Year III			Year IV			Year V		
		Level of Trainees	No. of Trainees	Duration	Level of Trainees	No. of Trainees	Duration	Level of Trainees	No. of Trainees	Duration	Level of Trainees	No. of Trainees	Duration	Level of Trainees	No. of Trainees	Duration
18. Utilization of Agro-Biological Resources 20. Inoculant Production, Quality Control and Field Demonstrations of Inoculant Effectivity Course includes lectures, audio visuals, Laboratory exercises and field demonstrations	Research Lab. Serv. Region				1A, 1B 1C, 1D L-2	8 12 TL 20	1mo	1	1A, 1B 1C, 1D L-2	8 12 TL 20	1mo	1	1A, 1B 1C, 1D L-2	8 12 TL 20	1mo	1
19. Utilization of Soil Micro Organisms in Reduced-Input Production Course includes use of azolla, BGA, jetbanis, compost. Lectures, demonstration, field trips	Research Lab. Serv. Soil Conservation ALMED Region				1A, 1B 1C L-2 L-3	6 24 10 TL 40	2wks	1	1A, 1B 1C L-2 L-3	6 24 10 TL 40	2wks	1	1A, 1B 1C L-2 L-3	6 24 10 TL 40	2wks	1
20. Technology for Soil Conservation 22. Soil Conservation and Management Course includes lectures, and preparation of soil conservation project planning and development. Lectures, audio visuals, field trips	Soil Conservation Research ALMED Water Res. Dev. Mgt. Region				1A, 1B 1C L-2	12 13 TL 25	1mo	1	1A, 1B 1C L-2 L-3	5 24 5 TL 35	2wks	1	1A, 1B 1C L-2 L-3	6 24 5 TL 35	2wks	1
23. Management and Rehabilitation of Hillylands Course includes discussion and audio visuals ofherent strategies in soil conservation and fertility improvement.	Soil Conservation Soil Survey Research ALMED Water Res. Dev. Mgt. Region				1A, 1C L-2	23 12 TL 35	1wk	2	1A, 1B 1C, 1D L-2 L-3	11 24 5 TL 40	1wk	1	1A, 1B 1C, 1D L-2 L-3	11 24 5 TL 40	1wk	1
XI. Environmental Sciences 24. Some problems of pesticide application Course also includes discussion of implications of pesticides use to beneficial soil organisms as N ₂ fixers, environmental pollution and health hazards.	Research Lab. Service Soil Conservation Region ALMED				1A, 1C L-2 L-3	5 24 10 TL 40	1wk	1	1A, 1B 1C, 1D L-2 L-3	5 24 10 TL 40	1wk	1	1A, 1B 1C, 1D L-2 L-3	5 24 10 TL 40	1wk	1

OVER - ALL CONCEPT



5. Present circumstances of cooperation of other countries in this field.

BSWM researchers participation in training courses abroad enhances technical and economic cooperation as well as exchange of information and joint research undertakings such as:

- a. International Laboratory Methods and Data Exchange programme with center in the Netherlands that permit us to keep our analytical test values. Techniques and procedures within international standards.
- b. International program of Reclamation of Saline/Sodic soils with FAO and the ASEAN countries.
- c. FAO-Finland Cooperative Programme on micro and macro nutrients in soils and agriculture with center in JOKIONEN, Finland.
- d. Phosphate fertilization program in the Philippines in collaboration with the World Phosphate Institute in Morocco.
- e. International Committees in the classification of Soil Taxonomy with the SMSS, USDA.
- f. Physical aspects of soil management in Rice-based Cropping Systems Project with IRRI and the International Irrigation Management Institute (IIMI) in Sri Lanka.

II. Position of National Development Program

1. Relation between development program, plans and Soil Research and Development

Some of the policies/sectoral concerns and activities of the DA in which soil research and development are concerned are listed below.

Policy/Sectoral Concern : Resource Conservation

Agenda for Action : Extend technologies that minimize soil erosion and nutrient depletion especially with uplands; encourage small water impounding projects.

Activities :

- establishment of soil guided farms
- Land use and suitability classification
- contour and bedgerow development
- production/update and distribution of soil base/fertility maps
- soil erosion control measure
- organic fertilizer utilization including fertilizer and pesticide analysis
- soil and water sampling, analyses and characterization
- production and distribution of soil inoculant
- azolla production
- guano development and maintenance
- conduct of information campaign on soil/water conservation including fertility management
- promotion of hillside farming or sloping agricultural land technology (SALT)
- promotion of multi-cropping/multi-storey farming
- establishment/maintenance of small water impounding projects.
- conduct area survey
- preparation of feasibility studies
- regulation of soil and land conversion from agricultural uses
- soil fertility utilization/evaluation studies
- NPK correlation assessment
- resource assessment
- Rainfed Resource Development Project (RRDP)

Policy Concern : Crop Diversification

Agenda for Action : Diversification in areas withdrawn from sugar production and in marginal coconut farms and upland rice and corn areas.

Activities : - production/distribution of legumes inoculants
- distribution of soil testing kits (STK) to technicians and farmers
- provision of soil testing activities (laboratories)
- production of mushroom sprawns
- promotion of multi-storey cropping in coconut farms
- conduct studies on soil conservation practices
- conduct technology generation studies on the influence of inoculant and utilization of mud press
- conduct studies on standardization of soil test methods and correlation trials for corn through both STK and laboratory tests.
- conduct land management studies

Policy/Sectoral Concern : Human Resource Development

Agenda for Action : Provide degree programs and non-degree training

Activities : - Provision of training courses with DA
- human resource development

2. Relation between development program/plans (i) Middle Economic Development (ii) Agricultural Development Plan and Project

(1) Actual utilization of results of the agricultural product to national development projects.

a. Comprehensive Agrarian Reform Program (CARP)

The verified and matured soil technology forms part of the package of technology that support CARP. This includes the recommended amount and kind of fertilizers by locations, use of inoculants, $ZnSO_4$ and agricultural lime.

The results of the Land Resources Evaluation Project of the ALMED help identify the portions of the public lands that have potentials for agriculture or agro-forestry. It also provide a list of possible crops that can be grown considering sustainability of productivity and ecological balance.

b. Integrated Area Development

The Soil Research and Development Center, through its different technical divisions will provide base data such as conditions and characteristics and soil management practices recommended in the proposed service area.

c. On Resource Conservation

The Department of Agriculture recognizes the rapid depletion of land and water resources reduces productivity of agriculture.

The agenda of action includes the extension of technologies that minimizes surface runoff (water being the main cause of soil erosion in humid tropics) and nutrient depletion especially in the uplands and the construction of water impounding project.

d. Crop Diversification

To reduce vulnerability to world market conditions, the DA encourages crop diversification in areas withdrawn from sugar production and in marginal coconut farms and upland rice and corn areas.

The BSWM identified the soils/land areas that should be withdrawn/diversified, determined the suitable crop substitutes or to form part of the multi-storey projects.

e. Import Replacement

The DA has targeted 10-15% sufficiency in dairy and 50% sufficiency in cotton by 1992. At present the country produce only 2% and 20% of its milk and cotton requirement respectively.

The SOILSEARCH Center can greatly help in attaining the objective through identification of areas suited for pasture and cotton and by conducting research on the micro/macro elements.

f. Research and Extension

The DA plans to increase agricultural research funding from 0.2% of the GVA in 1982 to 0.8% of GVA in 1992. Research projects are to be location-specific.

Through the SOILSEARCH Center, the results of researches in one location (soil-family) can be applied in other parts of the country having the same soil.

g. Agricusiness Investment Information

The BSWM through ALMED submits to the Regional Development Council its findings on land use assessment for agro-environmental development and investment. Data include thematic maps and tabulated data showing the location and extent of idle or under-utilized areas with agricultural potentials taking into account sustainability of profits and production.

d. Human Resource Development

Included in DA's action agenda is the provision of degree program and non-degree training for all levels of personnel for managerial and technical skill development.

The training program to be undertaken in the Soil Research and Development Center will be complementary to the above action plan of the Department of Agriculture. However, this training programme will be focused mainly on the use of soil/land-based information in planning the agricultural development of a locality

III Present Situation of Soil Research and Development Center

2. Assigned Employees (qualifications, position, sectors & numbers)

DIVISIONS	STATUS Permanent/Casual	PhD	Q U A L I F I C A T I O N S						Voc.	Underg.
			MS	BS	PGS	BS	MS	PhD		
Office of the Director	40		1	6	6					22
Soil Survey	31		4	16	8					3
Agricultural Land Mgt. & Evaluation	31	1	6	15	6			2		1
Soil Conservation & Management	29			20	3			1		5
Water Resources Mgt.	38		6	18	12			1		1
Soil & Water Resources Research	41	2								
Central Soil & Water Resources Research Station (Buena Vista/Tanay)	17/16									
Laboratory Services	35		1		12					
Cartographic Operation	27			10				3		9

Division	P O S I T I O N													
	DIR.	A.D	Sr.LO	POIII	SPO	CAL	SPEO	SOIII	CHII	IEI	RII	ROII	SOI	B S
Office of the Director	1	1	1	1	1	1	1	1	1	1	2	1	1	1
Soil Survey	1	4	4	16			4				2			
Agricultural Land Mgt. & Evaluation	1	3	3	9	12	2							1	
Soil Conservation & Management	1	4	3	12	5	1	1	2	2			1		
Water Resources Mgt.	1	4		27	2	1	1	2	2			1		
Soil & Water Resources Research	1	6	9	19		2				1	1	1	2	
Central Soil & Water Resources Research Station														
Buena Vista			1	4	2	1			6				1	1
Tanay			1	4	2	1			5				1	1
Laboratory Services	1	6	6	13	1	1			3					
HCENGR. SCENGR. CENGR. CST. SOPO. FLT. SRCAR. CARII. OPOII. CII. SFTS. SPLT														
Cartographic Operation	1	2	3	1	1	1	2	11	1	1	1	1	2	

Divisions	P O S I T I O N S														
	ROI	SPA	RO	IW	PI	PA	AMII	SE	DEOII	CII	D	SI	SA	M	J
Office of the Director	1	1	1	1	1	1	1	1	1	4	4	1	1	1	5
Soil Survey															
Agricultural Land Management and Evaluation															
Soil Conservation & Management															
Water Resources Management															
Soils and Water Resources Research															
Central Soil & Water Resources Research Station Buenavista Tenay														1	1
Laboratory Services															
Cartographic Operation															

ACRONYM

MEANING

D - Director
 AD - Assistant Director
 SLO - Senior Legal Officer
 POIII - Personnel Officer III
 SPO - Supervising Planning Officer
 CAI - Chief Accountant I
 SPEO - Senior Project Evaluation Officer
 SOIII - Supply Officer III
 C - Cashier II
 IEII - Information Editor II
 BII - Bookkeeper, II
 ROII - Record Officer II
 SOI - Supply Officer I
 B - Buyer
 S - Secretary
 ROI - Records Officer I
 SPA - Senior Personnel Aide
 RO - Radiophone Operator
 IW - Information Writer
 PI - Photographer I
 PA - Personnel Aide
 AMII - Automotive Mechanic
 SE - Shop Electrician
 DEOII - Duplicating Equipment Operator II
 CII - Clerk II
 D - Driver
 SI - Storekeeper I
 SA - Store Aide
 M - Messenger
 J - Janitor
 CAPS - Chief Agricultural Development Specialist
 SADS - Supervising Agricultural Development Specialist
 SrADS - Senior Agricultural Development Specialist
 ADS - Agricultural Development Specialist
 Car I - Cartographer I
 SC - Senior Clerk
 Car II - Cartographer II
 ADA - Agricultural Development Analyst
 ST - Soil Technician
 HEO - Heavy Equipment Operator
 M II - Mechanic II
 SA - Soils Aide
 PIT II - Precision Instrument Technician II
 PIT - Precision Instrument Technician I
 HC Engr. - Head Cartographic Engineer
 SC Engr. - Senior Cartographic Engineer
 CE - Cartographic Engineer
 CST - Color Separation Technician
 SOPO - Senior Offset - Press Operator
 PLT - Photogrammetry Laboratory Technician
 Sr Car - Senior Cartographer

OPO II - Offset Press Operator II
Sr PT - Senior Photo Type
SLT - Supervising Lithographic Technician

III - 3.0. Names of Equipment, items and materials currently use.

CATEGORY	DESCRIPTION	QTY.	LOCATION	STATUS DESCRIPTION	ACTION PLAN
Soil Research	1. Distilling apparatus	5	Soils Research Division	two serviceable	
	2. Analytical balance	6	- do -	three serviceable	
	3. Sauter Balance	4	- do -	three serviceable	
	4. pH meter	4	- do -	three serviceable	
	5. Radiometer	1	- do -	unserviceable	
	6. Spectrophotometer	3	- do -	one serviceable	
	7. Oven	1	- do -	serviceable	
	8. Fluorophotometer	1	- do -	serviceable	
	9. Electrical Conductivity meter	1	- do -	unserviceable	
	10. Muffle Furnace	2	- do -	one serviceable	
	11. Fumehood	3	- do -	serviceable	
	12. Centrifuge	2	- do -	serviceable	
	13. Shaker	1	- do -	serviceable	
	14. Specific Ionmeter	1	- do -	serviceable	
	15. X-ray Diffraction Unit	1	- do -	serviceable	
	16. Vacuum Pump	2	- do -	serviceable	
	17. Oven	6	- do -	five serviceable	
	18. Water Deionizer	1	- do -	unserviceable	

FACILITY/EQUIPMENT INVENTORY CHART - BSWH				
CATEGORY	DESCRIPTION	QTY.	LOCATION	
			STATUS DESCRIPTION	
			ACTION PLAN	
	19. Water Bath	1	Soils Research Division	serviceable
	20. Laboratory Micromill	1	- do -	serviceable
	21. Sunshine Gauge	1	- do -	unserviceable
	22. Photometer	1	- do -	serviceable
	23. Balance: platform, sartorius & pulp	6	- do -	serviceable
	24. Mechanical Stirrer	1	- do -	unserviceable
	25. Water Diminrolizer	1	- do -	serviceable
	26. Sieve Shaker	1	- do -	serviceable
	27. Stirring Hot Plate	1	- do -	serviceable
	28. Liquid Scintillation	1	- do -	serviceable
	29. Grinder (Plant tissue)	1	- do -	serviceable
	30. Grinder-Thomas	1	- do -	serviceable
	31. Monitor-Berthold	1	- do -	serviceable
	32. Atomic Absorption Spectrophotometer	2	- do -	one serviceable
	33. Hot Plate	1	- do -	serviceable
	34. Digestion System	1	- do -	serviceable
	35. Refrigerator	3	- do -	serviceable (old)
	36. Dissecting Microscope	1	- do -	serviceable
	37. Antislave	2	- do -	unserviceable

FACILITY/ EQUIPMENT INVENTORY CHART - BSWM

CATEGORY	DESCRIPTION	QTY.	LOCATION	STATUS DESCRIPTION	ACTION PLAN
	38 Rotary Shaker	1	Soils Research Division	serviceable (old)	
	39 Stove	1	- do -	serviceable (old)	
	40 Microscope Binocular	1	- do -	serviceable	
	41 Microscope	1	- do -	serviceable	

FACILITY/EQUIPMENT INVENTORY CHART - BSMH

CATEGORY	DESCRIPTION	QTY	LOCATION	STATUS DESCRIPTION	ACTION PLAN
	Atomic Absorption Spectrophotometer	1	Laboratory Services Division	Serviceable (old)	
	Flamephotometer	2	- do -	Serviceable (old)	
	Spectrophotometer	2	- do -	Serviceable (old)	
	Muffle Furnace	1	- do -	Serviceable (old)	
	Hot Plate	2	- do -	Unserviceable (old)	
	Fumehood	2	- do -	Unserviceable (old)	
	Moisture Retention or PF meter	1	- do -	Serviceable (old)	
	Magnetic Stirrer	3	- do -	Serviceable (old)	
	Soil Grinder	1	- do -	Serviceable (old)	
	Distilling Apparatus (Water Still)	1	- do -	Serviceable (old)	
	Water Bath	2	- do -	Serviceable (old)	
	Vacuum Pump	3	- do -	Serviceable (old)	
	Electrical Conductivity	2	- do -	One Unserviceable	
	Analytical Balance	2	- do -	Serviceable (old)	
	Top-loading Balance	3	- do -	Serviceable (old)	
	PH meter	2	- do -	Serviceable (old)	

FACILITY/EQUIPMENT INVENTORY CHART - BSM

CATEGORY	DESCRIPTION	QTY	LOCATION	STATUS DESCRIPTION	ACTION P
	Oven	4	Laboratory Services Division	Two Unserviceable	
	Centrifuge	3	- do -	Serviceable (old)	
	Mechanical Stirrer	2	- do -	Serviceable	
	Kjeldahl Digester Micro	5	- do -	Unserviceable	
	Kjeldahl Distillation	6	- do -	Serviceable	
	Kjeldahl Digester Macro	1	- do -	Unserviceable	
	Autoclave	1	- do -	Serviceable (old)	
	Plastic sealer	1	- do -	Serviceable	
	Rotary Shaker	1	- do -	None	
	Shaking Machine	2	- do -	Serviceable	
	Refrigerator	5	- do -	Two Unserviceable	
	Colony Counter	1	- do -	Serviceable	
	Grinder (Plant tissue)	1	- do -	Serviceable	

FACILITY/EQUIPMENT INVENTORY CHART - BSMK

CATEGORY	DESCRIPTION	QTY.	LOCATION	STATUS DESCRIPTION
Training	1. Screen, portable	1	Soil Research Division	serviceable
	2. Slide Projector	2	Property/Maintenance	unserviceable
		1	Laboratory Services	serviceable
	3. Overhead projector	1	Laboratory Services	for repair

FACILITY / EQUIPMENT INVENTORY CHART - BSWM

CATEGORY	DESCRIPTION	QTY.	LOCATION	STATUS DESCRIPTION	ACTION PLAN
Soil survey mapping and conservation	Hand Level, Abney	7	ALMED Survey Div.	Serviceable	
	Hand Level, Tamaya	4	ALMED	-do-	
	Hand Level	5	ALMED	-do-	
	Soil Auger, Dutch Type	2	ALMED	-do-	
		10	ALMED	-do-	
		15	Survey Div. Survey Div.	-do-	
	Soil Auger, Screw Type	8	ALMED	-do-	
	Core sampler	2	ALMED	Unserviceable	
	Core cylinders, brass	582	ALMED	Unserviceable - 450	
	Steel tapes, 3-meters	9	ALMED	-do-	
	Steel tapes, 2-meters	3	ALMED	-do-	
	Planimeter, Polar	1	ALMED	Serviceable	
	Compass, Liquid	3	Survey Cartography	-do-	
	Compass, Brunton	5	Soil Conservation	-do-	
		1	ALMED	-do-	
		1	Soil Conservation	-do-	
		2	ALMED	Serviceable	
		4	Survey	-do-	
		7	Soil Conservation	-do-	
		2	ALMED	-do-	
		1	Survey	-do-	
		4	ALMED	-do-	
		2	Survey	-do-	
		1	Soil Conservation	-do-	
		2	Soil Survey	-do-	
		2	ALMED	-do-	
	1	ALMED	-do-		
	1	ALMED	-do-		

FACILITY / EQUIPMENT INVENTORY CHART BSWNI

CATEGORY	DESCRIPTION	QTY.	LOCATION	STATUS DESCRIPTION	ACTION PLAN
Soil survey, mapping and conservation	Soil Color Chart	5	Soil survey	2 pcs. unserviceable	
	Geologist Hammer	2	-do-	serviceable	
	pH Kit	2	-do-	-do-	
	Projector, Slide	4	ALMED	Unserviceable	
	Projector, Opague	1	ALMED	Serviceable	
	Microscope, Polarizing	1	ALMED	-do-	
	Water Sampler	1	ALMED	Unserviceable	
	Permeability Kit	1	ALMED	-do-	
	Infiltrometer	1	ALMED	Serviceable	
	Core cylinders, brass	582	ALMED	Unserviceable - 450	
	Alidade, Telescopic	9	Soil Conservation	Serviceable	
	Alidade, Self reducing	7	-do-	-do-	
	Level, Engineers	10	-do-	-do-	
	Level, Builders	1	-do-	-do-	
	Rod, Leveling	18	-do-	-do-	

CATEGORY	DESCRIPTION	QUANTITY	Div.	Condition
Cartography, photogrammetry and printing.	Book Binder Machine	1	Cartographic Div.	Serviceable
	Process Camera	1	-do-	Unserviceable
	Beam Compass	1	-do-	-do-
	Copying Machine	4	-do-	Unserviceable - 2
	Drafting Pen Set	10	-do-	Serviceable
	Drawing Instrument	5	-do-	-do-
	Duplicating Machine	3	-do-	Unserviceable
	Drafting Machine	1	-do-	Serviceable
	Curve, Flexible	10	-do-	-do-
	Graver, Stabilene	2	-do-	Unserviceable - 10
	Lettering Set	20	-do-	Partially Serviceable
	Lettering Set	1	Soil Survey	Serviceable
	Lettering Set	14	Soil Conserva-	Unserviceable - 5
			tion	Unserviceable - 2
	Magnifying Lens	10	Cartographic Div.	Serviceable
	Pantograph	3	-do-	Unserviceable - 1
			Soil Conserva-	Unserviceable
		tion	Serviceable	
		-do-	Unserviceable	
		-do-	Serviceable	
		-do-	Unserviceable - 1	
		-do-	Serviceable	
		-do-	Unserviceable	
		-do-	Serviceable	

FACILITY / EQUIPMENT INVENTORY CHART - BSWM

CATEGORY	DESCRIPTION	QTY.	LOCATION	STATUS DESCRIPTION	ACTION PLAN
Cartographic photogrammetric and printing	Paper Trimmer	1	Cartographic Div.	Serviceable	
	Rectifier/Enlarger	1	-do-	-do-	
	Stencil Scanner	1	-do-	-do-	
	Stencil Cutter	1	-do-	Unserviceable	
	Plate Maker	1	-do-	Serviceable	
	Varigraph Stereoplotter	1 1	Soft Conservation -do-	-do- -do-	

FACILITY / EQUIPMENT INVENTORY CHART - BSWM

CATEGORY	DESCRIPTION	QTY.	LOCATION	STATUS DESCRIPTION	ACTION PLAN
Water resources management; establishment of agromet station, and rain-making activities.	Rain Gauge, standard Hook Gauge	6 12	Soil Conservation -do-	Serviceable -do-	

FACILITY		EQUIPMENT INVENTORY		CHART		BSWNA	
CATEGORY	DESCRIPTION	QTY	LOCATION	STATUS	DESCRIPTION	ACTION	PL
Audio-visual and photographic equipment	1. Camera, 135 mm	2	Soil Conservation	Unserviceable			
	2. Cabinet, Film Drying	2	Cartography	Unserviceable			
	3. Drier, "Japo"	1	-do-	Serviceable			
	4. Enlarger, "Durst"	1	-do-	-do-			
	5. Light Meter	1	-do-	-do-			
	6. Temperature Control Sink	1	-do-	-do-			
	7. Timer, Universal	1	-do-	-do-			
	8. Waxing Machine	1	-do-	-do-			
	9. microphone, wireless	2	Maintenance Sec.	Good Condition			
	10. Housing for microphone	10	-do-	-do-			
	11. Voice coil for microphone	10	-do-	-do-			
	12. Solar magnet tabular type for microphone	10	-do-	-do-			
	13. Sliding switch for microphone high and low impedance	10	-do-	-do-			
	14. Diagram for microphone	10	-do-	-do-			
	15. Microphone stand, cable type with flexible neck	10	-do-	-do-			

FACILITY / EQUIPMENT INVENTORY CHART - BSWM

CATEGORY	DESCRIPTION	QTY.	LOCATION	STATUS DESCRIPTION	ACTION PLAN
Audio-visual and photographic equipment (cont'd)	16. National Intercom, model VL204 A/205A wallmount type super selective system	24	Maintenance Sec.	Good Condition	
	17. Radio telephone SSB 200W	2	-do-	-do-	
	18. Transformer, variable 200/115V, 500M 50/60 cycles w/ volt meter	1	-do-	-do-	
	19. Microphone w/ floor stand and cord	1	-do-		

INVENTORY AND STATUS OF REGIONAL LABORATORY EQUIPMENT

REGIONS (1 TO 12)

ITEM	STATUS/CLASSIFICATION AND QUANTITY	
	SERVICEABLE	FOR REPLACEMENT
1. Atomic Absorption Spectrophotometer	0	12
2. Flamephotometer	0	12
3. Spectrophotometer	5	6
4. Hot Plate	0	12
5. Fumehood	0	12
6. Analytical Balance	4	8
7. Top-Loading Balance	6	6
8. Muffle Furnace	1	9
9. Moisture Retention (pF Meter)	2	0
10. Distilling Apparatus	4	6
11. Water Bath	2	3
12. Vacuum Pump	0	2
13. Electrical Conductivity Meter	1	3
14. pH Meter	10	2
15. Oven	7	4
16. Centrifuge	3	6
17. Mechanical Stirrer	3	4
18. Kjeldahl Digester (micro)	0	3
19. Kjeldahl Digester (macro)	0	12
20. Kjeldahl Distillation	8	3
21. Autoclave/Pressure Cooker	0	10
22. Plastic Sealer	7	1
23. Shaking Machine	1	11
24. Refrigerator	9	3

BUDGETARY AND ACTIVITY TARGETS FIVE YEAR PERIOD
Government of the Philippines Counterpart

ACTIVITY	YEAR 1 - 1989	
	WITHOUT THE CENTER	WITH THE CENTER
1.0 Land Capability/Suitability Classification		
Activity Target (hectare)	1,910,640	-
Budgetary Estimate (P'000,000)	P4.777	-
2.0 Crop Zonification/Diversification Program		
Activity Target (hectare)	2,052,110	-
Budgetary Estimate (P'000,000)	P8.208	-
3.0 Farm Management Viability Studies		
Activity Target (hectare)	960,260	-
Budgetary Estimate (P'000,000)	P4.801	-
4.0 Soil Taxonomic Mapping, Classification, Correlation and Interpretation		
Activity Target (hectare)	445,341	-
Budgetary Estimate (P'000,000)	P2.597	-
5.0 Production of Soil-based Thematic Maps		
Activity Target (hectare)	1,100	-
Budgetary Estimate (P'000,000)	P3.885	-
6.0 Water Resources Planning and Management		
Activity Target (hectare)	1,400	-
Budgetary Estimate (P'000,000)	P2.475	-
7.0 Operation and Maintenance of Agromet Stations		
Activity Target (no. of stations)	22	-
Budgetary Estimate (P'000,000)	P3.398	-

BUDGETARY AND ACTIVITY TARGETS FIVE-YEAR PERIOD
Government of the Philippines Counterpart

ACTIVITY	YEAR 1 - 1989	
	WITHOUT THE CENTER	WITH THE CENTER
8.0 Soil Conservation, Management and Development		
Activity Target (hectares)	350	-
Budgetary Estimate (P'000,000)	P4.375	-
9.0 Exploration, Development, and utilization of biological and other indigenous fertilizer materials		
Activity Target (hectares)	300	-
Budgetary Estimate (P'000,000)	P3.150	-
10.0 Soil and Water Resources Management Research Programs		
Activity Target (no. of researches)	9	-
Budgetary Estimate (P'000,000)	P4.725	-
11.0 Soil Testing		
Activity Target (samples)	204,500	-
Budgetary Estimate (P'000,000)	P10.225	-
12.0 Isolation Production, and quality testing of soil inoculants		
Activity Target (pachets)	12,000	-
Budgetary Estimate (P'000,000)	P1.800	-
13.0 Coordination, Monitoring, and evaluation of rain stimulation activities		
Budgetary Estimate (P'000,000)	P4.800	-
14.0 General Administrative Services including scholarship and training		
Budgetary Estimate (P'000,000)	P7.846	-

BUDGETARY AND ACTIVITY TARGETS FIVE YEAR PERIOD
Government of the Philippines Counterpart

ACTIVITY	YEAR 2 - 1990		% INC.
	WITHOUT THE CENTER	WITH THE CENTER	
1.0 Land Capability/Suitability Classification			
Activity Target (hectare)	2,211,980	4,264,090	92.77%
Budgetary Estimate (P'000,000)	P5.530	P6.396	15.66%
2.0 Crop Zonification/Diversification Program			
Activity Target (hectare)	2,070,510	3,530,000	70.49%
Budgetary Estimate (P'000,000)	P8.232	P8.825	6.56%
3.0 Farm Management Viability Studies			
Activity Target (hectare)	1,216,810	3,110,000	155.58%
Budgetary Estimate (P'000,000)	P6.084	P9.330	53.35%
4.0 Soil Taxonomic Mapping, Classification, Correlation and Interpretation			
Activity Target (hectare)	508,710	1,932,906	279.96%
Budgetary Estimate (P'000,000)	P3.376	P4.510	33.59%
5.0 Production of Soil-based Thematic Maps			
Activity Target (hectare)	1,332	2,220	66.67%
Budgetary Estimate (P'000,000)	P4.662	P5.106	9.52%
6.0 Water Resources Planning and Management			
Activity Target (hectare)	1,618	2,518	55.62%
Budgetary Estimate (P'000,000)	P2.847	P3.274	14.99%
7.0 Operation and Maintenance of Agronet Stations			
Activity Target (no. of stations)	24	40	66.67%
Budgetary Estimate (P'000,000)	P3.908	P4.844	23.95%

BUDGETARY AND ACTIVITY TARGETS FIVE YEAR PERIOD
Government of the Philippines Counterpart

ACTIVITY	YEAR 2 - 1970		% INC.
	WITHOUT THE CENTER	WITH THE CENTER	
8.0 Soil Conservation, Management and Development			
Activity Target (hectares)	575	750	30.43%
Budgetary Estimate (P'000,000)	P6.325	P6.750	6.71%
9.0 Exploration, Development, and utilization of biological and other indigenous fertilizer materials			
Activity Target (hectares)	450	500	11.00%
Budgetary Estimate (P'000,000)	P4.050	P4.500	11.11%
10.0 Soil and Water Resources Management Research Programs			
Activity Target (no. of researches)	11	20	81.82%
Budgetary Estimate (P'000,000)	P5.775	P6.500	12.55%
11.0 Soil Testing			
Activity Target (samples)	245,175	410,150	67.23%
Budgetary Estimate (P'000,000)	P12.258	P12.304	0.37%
12.0 Isolation Production, and quality testing of soil inoculants			
Activity Target (packets)	13,800	20,000	44.93%
Budgetary Estimate (P'000,000)	P2.070	P2.400	15.94%
13.0 Coordination, Monitoring, and evaluation of rain stimulation activities			
Budgetary Estimate (P'000,000)	P6.200	P6.800	9.68%
14.0 General Administrative Services including scholarship and training			
Budgetary Estimate (P'000,000)	P10.924	P11.000	0.69%

BUDGETARY AND ACTIVITY TARGETS FIVE YEAR PERIOD
Government of the Philippines Counterpart

ACTIVITY	YEAR 3 - 1991		% INC.
	WITHOUT THE CENTER	WITH THE CENTER	
1.0 Land Capability/Suitability Classification			
Activity Target (hectare)	2,428,942	5,716,262	135.33%
Budgetary Estimate (P'000,000)	P7.287	P8.574	17.66%
2.0 Crop Zonification/Diversification Program			
Activity Target (hectare)	2,211,019	4,090,000	84.98%
Budgetary Estimate (P'000,000)	P9.949	P10.945	10.01%
3.0 Farm Management Viability Studies			
Activity Target (hectare)	1,288,960	6,640,000	415.14%
Budgetary Estimate (P'000,000)	P6.445	P16.600	157.56%
4.0 Soil Taxonomic Mapping, Classification, Correlation and Interpretation			
Activity Target (hectare)	518,470	2,110,190	307.0%
Budgetary Estimate (P'000,000)	P4.388	P4.606	4.97%
5.0 Production of Soil-based Thematic Maps			
Activity Target (hectare)	1,480	3,330	77.70%
Budgetary Estimate (P'000,000)	P5.180	P6.993	35.0%
6.0 Water Resources Planning and Management			
Activity Target (hectare)	1,926	3,137	62.88%
Budgetary Estimate (P'000,000)	P3.390	P3.765	9.88%
7.0 Operation and Maintenance of Agronet Stations			
Activity Target (no. of stations)	25	60	140.0%
Budgetary Estimate (P'000,000)	P4.494	P5.518	22.79%

BUDGETARY AND ACTIVITY TARGETS FIVE YEAR PERIOD
Government of the Philippines Counterpart

ACTIVITY	YEAR 3 - 1991		% INC.
	WITHOUT THE CENTER	WITH THE CENTER	
8.0 Soil Conservation, Management and Development			
Activity Target (hectares)	600	950	58.33%
Budgetary Estimate (P'000,000)	P7.500	P8.550	14.00%
9.0 Exploration, Development, and utilization of biological and other indigenous fertilizer materials			
Activity Target (hectares)	550	700	27.28%
Budgetary Estimate (P'000,000)	P4.950	P5.850	18.19%
10.0 Soil and Water Resources Management Research Programs			
Activity Target (no. of researches)	13	28	115.38%
Budgetary Estimate (P'000,000)	P6.825	P9.100	33.33%
11.0 Soil Testing			
Activity Target (samples)	255,951	515,121	101.26%
Budgetary Estimate (P'000,000)	P12.797	P12.878	0.63%
12.0 Isolation Production, and quality testing of soil inoculants			
Activity Target (pachets)	15,000	40,000	166.67%
Budgetary Estimate (P'000,000)	P2.250	P2.600	15.56%
13.0 Coordination, Monitoring, and evaluation of rain stimulation activities			
Budgetary Estimate (P'000,000)	P8.700	P9.000	3.45%
14.0 General Administrative Services including scholarship and training			
Budgetary Estimate (P'000,000)	P11.655	P12.000	2.96%

BUDGETARY AND ACTIVITY TARGETS FIVE YEAR PERIOD
Government of the Philippines Counterpart

ACTIVITY	YEAR 4 - 1992		% INC.
	WITHOUT THE CENTER	WITH THE CENTER	
1.0 Land Capability/Suitability Classification			
Activity Target (hectare)	2,560,642	6,060,621	136.68%
Budgetary Estimate (P'000,000)	P8.962	P10.909	21.72%
2.0 Crop Zonification/Diversification Program			
Activity Target (hectare)	2,428,942	6,700,000	175.84%
Budgetary Estimate (P'000,000)	P10.930	P16.750	53.25%
3.0 Farm Management Viability Studies			
Activity Target (hectare)	1,329,303	6,750,000	407.78%
Budgetary Estimate (P'000,000)	P6.647	P16.875	153.87%
4.0 Soil Taxonomic Mapping, Classification, Correlation and Interpretation			
Activity Target (hectare)	637,762	2,238,736	251.03%
Budgetary Estimate (P'000,000)	P5.705	P5.766	1.07%
5.0 Production of Soil-based Thematic Maps			
Activity Target (hectare)	1,776	4,440	150.0%
Budgetary Estimate (P'000,000)	P6.216	P7.992	28.57%
6.0 Water Resources Planning and Management			
Activity Target (hectare)	2,172	3,608	66.11%
Budgetary Estimate (P'000,000)	P3.823	P4.330	13.26%
7.0 Operation and Maintenance of Agronet Stations			
Activity Target (no. of stations)	26	80	207.69%
Budgetary Estimate (P'000,000)	P5.168	P6.293	21.77%

FIVE YEAR PERIOD
Government of the Philippines Counterpart

ACTIVITY	YEAR 4 - 1992		% INC.
	WITHOUT THE CENTER	WITH THE CENTER	
8.0 Soil Conservation, Management and Development			
Activity Target (hectares)	725	1,200	65.51%
Budgetary Estimate (P'000,000)	P9.063	P10.800	19.17%
9.0 Exploration, Development, and utilization of biological and other indigenous fertilizer materials			
Activity Target (hectares)	650	1,100	69.23%
Budgetary Estimate (P'000,000)	P6.850	P7.650	11.68%
10.0 Soil and Water Resources Management Research Programs			
Activity Target (no. of researches)	15	35	133.33%
Budgetary Estimate (P'000,000)	P7.875	P10.500	33.33%
11.0 Soil Testing			
Activity Target (samples)	266,843	821,050	207.70%
Budgetary Estimate (P'000,000)	P13.342	P16.421	23.08%
12.0 Isolation Production, and quality testing of soil inoculants			
Activity Target (packets)	19,000	80,000	344.44%
Budgetary Estimate (P'000,000)	P2.700	P3.000	11.11%
13.0 Coordination, Monitoring, and evaluation of rain stimulation activities			
Budgetary Estimate (P'000,000)	P10.000	P10.800	8.00%
14.0 General Administrative Services including scholarship and training			
Budgetary Estimate (P'000,000)	P12.565	P13.000	3.46%

BUDGETARY AND ACTIVITY TARGETS FIVE-YEAR PERIOD
Government of the Philippines Counterpart

ACTIVITY	YEAR 5 - 1993		% INC.
	WITHOUT THE CENTER	WITH THE CENTER	
1.0 Land Capability/Suitability Classification			
Activity Target (hectare)	2,611,019	6,369,264	143.94%
Budgetary Estimate (P'000,000)	P10.444	P12.739	21.97%
2.0 Crop Zonification/Diversification Program			
Activity Target (hectare)	2,960,642	-	-
Budgetary Estimate (P'000,000)	P13.323	-	-
3.0 Farm Management Viability Studies			
Activity Target (hectare)	1,371,615	6,750,000	392.12%
Budgetary Estimate (P'000,000)	P6.858	P16.875	146.06%
4.0 Soil Taxonomic Mapping, Classification, Correlation and Interpretation			
Activity Target (hectare)	750,360	2,586,323	244.68%
Budgetary Estimate (P'000,000)	P7.416	P7.752	4.53%
5.0 Production of Soil-based Thematic Maps			
Activity Target (hectare)	2,220	5,920	166.67%
Budgetary Estimate (P'000,000)	P7.770	P8.880	14.29%
6.0 Water Resources Planning and Management			
Activity Target (hectare)	2,456	4,150	68.97%
Budgetary Estimate (P'000,000)	P4.322	P4.980	15.22%
7.0 Operation and Maintenance of Agromet Stations			
Activity Target (no. of stations)	27	144	487.5%
Budgetary Estimate (P'000,000)	P5.943	P6.835	15.01%

BUDGETARY AND ACTIVITY TARGETS FIVE YEAR PERIOD
Government of the Philippines Counterpart

ACTIVITY	YEAR 5 - 1993		% INC.
	WITHOUT THE CENTER	WITH THE CENTER	
8.0 Soil Conservation, Management and Development			
Activity Target (hectares)	800	1,500	87.50%
Budgetary Estimate (P'000,000)	P10.000	P13.500	35.00%
9.0 Exploration, Development, and utilization of biological and other indigenous fertilizer materials			
Activity Target (hectares)	850	1,500	76.47%
Budgetary Estimate (P'000,000)	P7.866	P8.550	8.69%
10.0 Soil and Water Resources Management Research Programs			
Activity Target (no. of researches)	15	40	166.67%
Budgetary Estimate (P'000,000)	P9.056	P12.000	32.51%
11.0 Soil Testing			
Activity Target (samples)	287,870	1,045,000	263.01%
Budgetary Estimate (P'000,000)	P14.393	P15.675	8.90%
12.0 Isolation Production, and quality testing of soil inoculants			
Activity Target (pachets)	20,000	160,000	700.00%
Budgetary Estimate (P'000,000)	P3.000	P4.000	33.33%
13.0 Coordination, Monitoring, and evaluation of rain stimulation activities			
Budgetary Estimate (P'000,000)	P11.200	P11.600	3.57%
14.0 General Administrative Services including scholarship and training			
Budgetary Estimate (P'000,000)	P13.665	P14.000	2.45%

IV - 2 Reasons in detail for why term of cooperation has been set for five years

The grant aid project for the Center involves two phases (I & II) which will take about 24 months at the most to complete. This project includes equipment build-up for the BSWM and the Center.

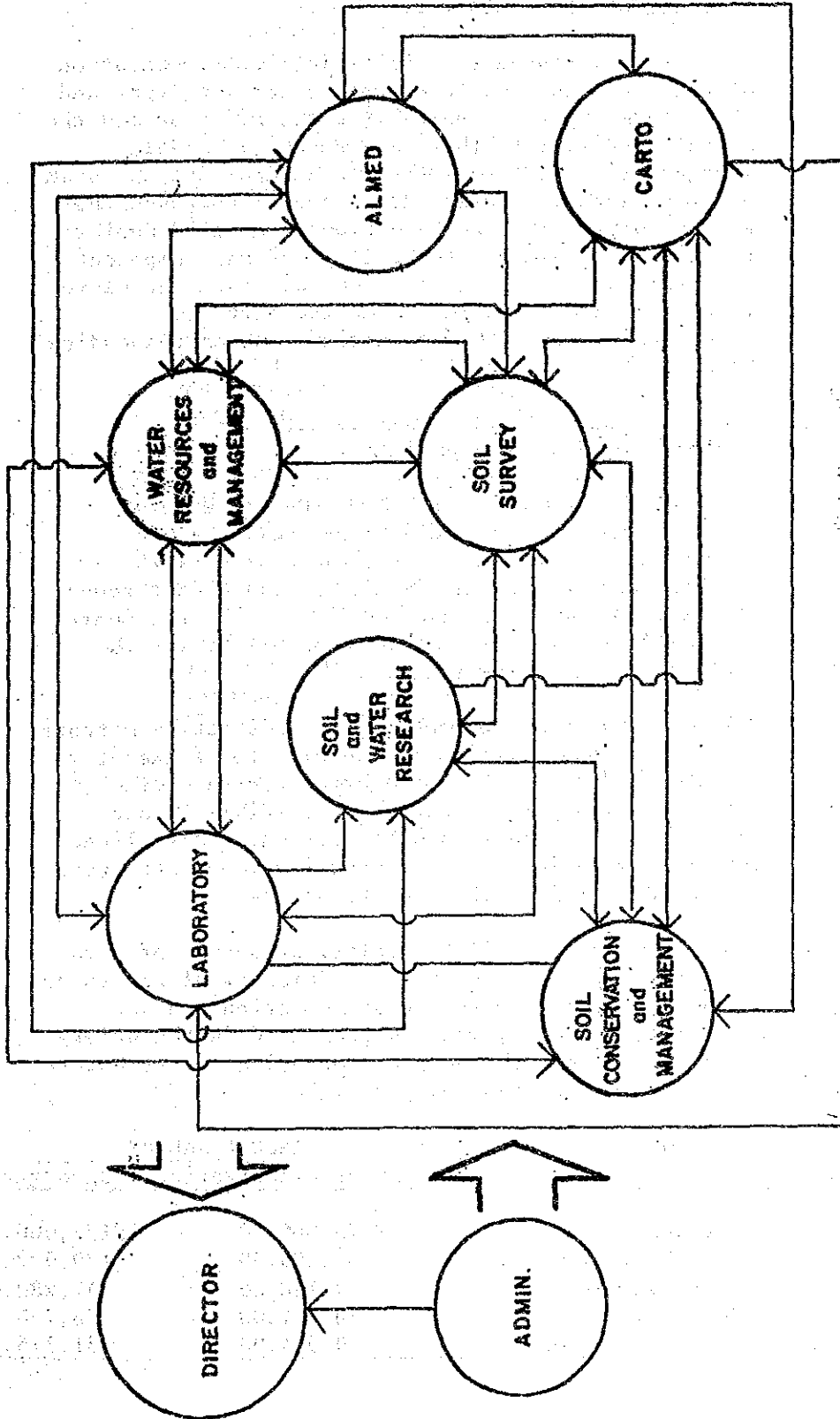
In terms of human resources development in the Center, two facets of activities are fully understood: 1) training of human resources to keep abreast with new technology, and 2) continuing activities and programs for the Center. There are at least nine (9) major technical group of personnel in the Center that have to be well aware and adept to the new developments present in the Center. The appropriate training for this group, obviously, will extend beyond a year or two.

Both Governments depend on annual budget allocations in terms of a fiscal year. It is simply impossible to exert pressure on the budget where allocations will be on the bulk of training. Budgetary estimates that include counterpart training cost reach a measurable and feasible level in five (5) years.

It is extended further that equipment warranties and guaranties extends up to a minimum of two years, after which maintenance cost and trouble shooting occur upon the acquired instruments. Fine tuning for such activities extends beyond the third year.

Still, a follow through of all incremental activities in the Center aside from regular activities of the BSWM starts after the peak period in the Center (estimated within year 3) necessitates the presence of donor country in order to monitor and measure the effectivity of the Center in attaining the objectives of the Project. The joint efforts of the experts and its counterparts will bear results of the peak of activity (Year 3).

Final assessment of the activity both for grant aid and technical cooperation will therefore be measured not within a year or two but more or less on short period of five years or more. The conclusion is that technical cooperation is requested for five years but extension of the cooperation is not far from the minds of the recipient government if deemed that five years of cooperation is not sufficient to reach a mutual goal of success.



COMPLEMENTATION FLOW CHART

IV - 4. Organization and Personnel Plan for the Project

4.1 Allocation for counterparts

It is intended to utilize full complementation of BSWM personnel as counterparts for long term and short term experts. Aside from the Director and the Assistant Director, there are seven (7) middle managers with diverse expertise attached to the BSWM and the Center. Another 29 personnel composed the supervisory groups and 30 employees holding Senior positions. These are the full personnel component available as counterparts. The main idea therefore is to assign both full time and part time counterparts for each expert with each corresponding back term/s.

4.2 Who will bear overall responsibility for the implementation of the project.

The BSWM is mandated by the DA to perform responsibilities according to set policies and objectives. Under such organizational network, it is therefore the responsibility of the BSWM through its Director or the Executive Director of the Center that will bear the overall responsibility for the implementation of the project.

4.3 Following the same contention, administrative matters are the responsibilities of the Director / Executive Director. However, for managerial pre-requisites, the middle managers or head of each division are responsible for the project execution. These lines are clearly depicted in the organizational structure presented in I-2 of this questionnaire.

4.4 The following table is the salary structure of each position as enumerated in 4.1. Salaries of equivalent personnel in non-government organization are not available. However, what is presented in the salary structure under both the pre-reorganization structure and under the reorganized plantilla.

POSITION	ANNUAL SALARY	
	Pre-reorganization	Re-organized
Director	₱ 78,500.00	₱132,000.00
Assistant Director	67,605.00	120,000.00
Division Chief	29,148.00	47,280.00
Supervisor	23,892.00	38,760.00
Senior Positions	19,584.00	31,776.00

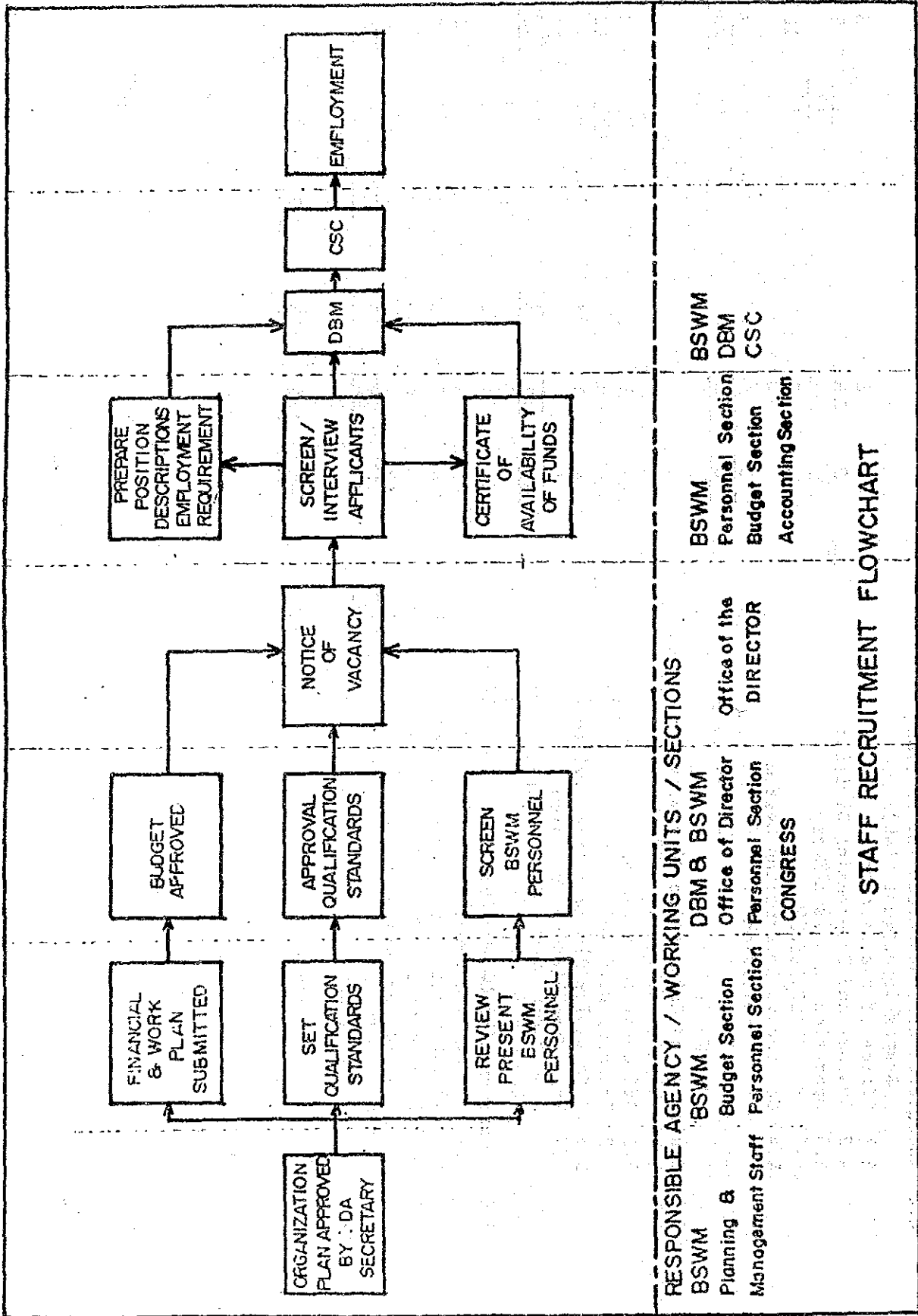
IV - 4.5 Annual Plan of Increasing Staff

- 4.5.1 The present reorganization of the Department of Agriculture as mandated by Executive Order No. 116 caused the creation of a centralized administrative group under the Office of the Secretary of Agriculture, with a minimum number of administrative staff in the Bureau. Thus, a net reduction of BSWM personnel from 474 to 307 is the effect of the movement of administrative personnel.
- 4.5.2 The total projected staffing plan of 713 will be attained through the detail of existing Department of Agriculture personnel, additional BSWM plantilla positions, or SOILSEARCH project hired staff.
- 4.5.3 The staffing plan is projected to commence in 1989 with the hiring of the Deputy Executive Director, the Department Directors, and key staff of the ISRIS and Training Departments as the priority. It is likewise noteworthy to mention that the maintenance engineers that will be in charge of electrical, air-conditioning, plumbing, and specialized equipment systems will likewise be appointed during this period.
- 4.5.5 Full staffing for the SOILSEARCH Center will be attained by 1992 as shown in the table annexed hereto.

DEPARTMENT/DIVISION	BSWM Staffing Allocation per EO 116	ANNUAL PLAN OF INCREASING STAFF ADDITIONAL STAFF WITH THE SOILSEARCH CENTER				TOTAL STAFF for the SOILSEARCH
		1989	1990	1991	1992	
1.0 Office of the Executive Director (32)	2		2	2	2	8
1.1 Office of the Deputy Executive Director		1	2	2	3	8
1.2 Legal Staff	1		1	1	2	5
1.3 Management Staff		3	3	3	2	11
Sub-Total	<u>3</u>	<u>4</u>	<u>8</u>	<u>8</u>	<u>9</u>	<u>32</u>
2.0 Research and Survey Department (469)						
2.1 Office of the Director	31	1	1			2
2.2 Soil Survey Division		7	7	7	8	53
2.3 Soil Conservation and Management Division	29		6	7	7	49
2.4 Soil and Water Research Division	76		6	6	7	95
2.5 Laboratory Services Division	35		22	18	18	93
2.6 Cartographic Operations Division	27		6	6	7	46
2.7 Water Resources Management Div.	38		10	10	7	65*
2.8 Agricultural Land Mgt. & Evaluation Division	31		13	13	9	66*
Sub-Total	<u>267</u>	<u>1</u>	<u>71</u>	<u>67</u>	<u>63</u>	<u>469</u>
3.0 Special Projects and Services Department (50)						
3.1 Office of the Director		1	2			3
3.2 Satellite Center			12	4		16
3.3 Rain Stimulation and Monitoring Office			12	7		19
3.4 Remote Sensing Division			12			12
Sub-Total		<u>1</u>	<u>38</u>	<u>11</u>		<u>50</u>

* realigned number of positions

4.0 Integrated Soil Resources Information							
System Department (40)							
4.1 Office of the Director	1	2					3
4.2 Systems and Programming Division	3	16					19
4.3 Operations and Data Entry Division	3	7					10
4.4 Geographic Information System Division	3	5					8
Sub-Total	<u>10</u>	<u>30</u>					<u>40</u>
5.0 Training and Information Dissemination Department (42)							
5.1 Office of the Director	1	1					3
5.2 Training Division	4	4					12
5.3 Information Dissemination Division	4	5					14
5.4 Mass Communication Division	4	4					13
Sub-Total	<u>13</u>	<u>14</u>					<u>42</u>
6.0 Administration Department (80)							
6.1 Office of the Director	1	3					4
6.2 Administrative Services Division	4	3			2		23
6.3 Finance Division	4	6			3		23
6.4 General Services Division	8						30
Sub-Total	<u>17</u>	<u>12</u>			<u>5</u>		<u>80</u>
TOTAL	<u>46</u>	<u>173</u>	<u>110</u>	<u>77</u>			<u>713</u>



IV - 5 Budget for the Project

5.1 The actual working budget of the Department of Agriculture during the past three years are as follows:

	1986 (P'000)	1987 (P'000)	1988 (P'000)
General Agricultural Administration	325,631	273,471	298,620
Current Operating Expenditures	961,600	1,607,997	1,712,200
Capital Outlays	<u>286,557</u>	<u>692,131</u>	<u>168,333</u>
TOTAL	<u>1,573,788</u>	<u>2,573,599</u>	<u>2,179,153</u>

5.2 The annual operation and management expenses for the Project as programmed is shown in the Annex hereto attached.

5.3 The Philippine Government is giving the assurance that local costs necessary for the implementation of the project would be provided. The assurance as stated, could specifically be proven by the release for this year 1988 of a special budget in the amount P7,776,000.00 for the Soils Research and Development Center to cover the cost of the site clearing prior to construction and other studies which the BSWM is undertaking relevant to the SOILSEARCH Center. Moreover, for CY 1989, the total percentage increase of the BSWM budget over CY 1988 is 70.6%, with the percentage increase for maintenance and other operating expenses at 89.3% and for capital outlays at 2,751.6%.

5.4 The budget for obtaining Landsat MSS, T/M or SPOT data is included in the budgetary program for the SOILSEARCH as shown in the annex IV - 5.1.

Operational Requirement of the
Soil Research and Development Center (SOILSEARCH)
Budgetary Program (1989-1994)

		(In Thousand Pesos)					
		1989	1990	1991	1992	1993	1994
1.0	Salaries						
1.1	Permanent Positions	6,982	9,348	10,283	11,311	12,442	13,687
1.2	Other Personal Services	3,811	8,635	8,635	8,635	8,635	8,635
	Sectional Total	10,793	17,983	18,918	19,946	21,077	22,322
2.0	Operations						
2.1	Electricity	2,300	2,400	3,000	3,500	4,000	4,500
2.2	Water	632	853	1,000	1,200	1,400	1,600
2.3	Telephone & Postage	455	746	800	900	1,000	1,200
2.4	Gas & Fuel (Lab Gas)	30	35	50	80	100	120
2.5	Traveling Expenses	12,555	13,000	15,000	19,000	20,000	21,000
2.6	Transportation Services	196	600	700	800	900	1,000
2.7	Representation and Emergency Expenses	20	20	20	20	20	20
2.8	Other Services	18,401*	19,215	22,539	23,688	24,866	26,316
	Sectional Total	34,589	36,869	63,109	49,188	52,286	55,756
3.0	Supplies						
3.1	Consumables	18,176	31,000	50,000	65,000	70,000	85,000
3.2	Gasoline & Oil (including Servicing of Vehicles)	12,118	7,000	10,000	12,000	13,500	15,000
	Sectional Total	30,294	38,000	60,000	77,000	83,500	100,000
4.0	Capital Outlay						
4.1	Land and land Improvement Outlay		4,450	10,000	10,000	10,000	10,000
4.2	Equipment Outlay	6,131	20,000	13,000	13,000	13,000	13,000
	Sectional Total	6,131	24,450	23,000	23,000	23,000	23,000
	GRAND TOTAL	81,807	117,302	145,027	169,134	179,863	201,078

* rent in the amount of P3,562,000 is included

IV - 6. Cooperation with other agencies for the implementation of the project.

6.1 Channels through which LANDSAT MSS, T/M and SPOT data are obtainable and the present situation and future prospects of cooperation with the data supply sources.

Upon consultation with the office of the National Mapping Resources Information Authority (NAMRIA), the Central Mapping Agency for the Philippine government for which the BSWM is a member of the Technical Advisory Committee in thematic mapping, specifically in the mapping of soil resources, it was made known that LANDSAT/SPOT DATA may be acquired by the BSWM and any other agency through this office, this being the arrangement requisite for the Swedish/French Aerospace and World Bank accordingly in a Memorandum of understanding.

The NAMRIA is present with such understanding, has been granted free the coverage for 43 toposheets scales 1:250,000 consisting of 193 scenes (1987-1988 imagery); scales 1:100,000 and 1:400,000 hard copy prints and its corresponding tapes.

Through the facilities of the NAMRIA, it is also possible with certain project understanding to reproduce Hard Print-out copies and others, since the following equipment and facilities are available to this office.

1. MICRO BRYNER with digitizer
2. IMAGE PROCESSOR

It is made known also that NAMRIA will have to purchase the geometrically correct image effective the year 1989; and local purchases and uses will be channel through NAMRIA.

6.2 Cooperation with the National Irrigation Administration, etc.

The BSWM or the Center can assure not only NIA but other agencies as well in the provision of soil survey and research results, pedological aspects being a major mandate of the BSWM. In this regard the use of remotely sensed data in the

preparation of soil-based thematic maps will play a major role to accelerate such kind of activity. For water resources, however, effective conservation and management requires a close exchange of information and coordination between agencies involved in such project especially NIA. As has been the activities of the past the complimentation programs of the BSWM and other agencies outside of the DA will be stronger as a result of faster and effective delivery of services to these agencies.

- 6.3 Present situation regarding use of the thematic soil maps and agricultural land utilization thematic maps drawn by Soils Research and Development Center by other bureaus, sections, Centers or agencies of the Department of Agriculture.

The present regulation of the BSWM as regards to use and disposal of all soil-based thematic maps is generally non-restrictive especially to agencies of the DA including planning/instructional/forestry development, etc., this being the general function mandated in the policy of the DA. Aside from government agencies as end-users of soil-based thematic maps, non-government organizations can avail of these maps simply by purchasing the maps/reports of their interest. There is no clearance or permits necessary to obtain these maps from the BSWM or the Center.

- 6.4 Cooperation with other agencies relative to soil research and remote sensing technology.

In order to avail of the facilities of Remote Sensing at NAMRIA, the BSWM needs to execute project Memorandum of Agreement and similar arrangement shall also be made for materials purchases i.e. No. of scenes by the sites either SPOT or LANDSAT.

IV - 7. Others

7.1 Areas covered by Landsat MSS, T/M and SPOT data collected and quantities of such data

The whole country is covered quite well by both LANDSAT and SPOT.

For LANDSAT imagery a total of 42 scenes cover the whole archipelago. Available scenes presently in the position of the bureau are hard copies scale 1:250,000 of composites and separate of a bands 5, 6, and 7 of the same scale obtained in 1976 through FAO-UNDP Project assistance. No attempt from the bureau was made to secure latest imagery from the source (BANGKOK).

Scenes from SPOT donated by the Swedish government covering about 193 scenes, more or less, are available in tapes or prints from the NAMRIA. These scenes are new imagery obtained from SPOT, the latest of which is June 1988. Acquisition for such imagery is through the NAMRIA, where tapes or hard copies could be obtained. Color composites are available in hard prints of any of the scenes from NAMRIA. Efforts are being made to extend the cooperation for the supply and delivery of these scenes on an annual basis with the Swedish Space Corporation.

7.2 Quantity of regional data including aeronautic data, topographical maps and swamp land maps collected heretofore.

The Philippines are aptly covered by topographic maps at different levels of scale.

The 1:1,000,000 scale topographic series is composed of 6 sheets depicting height (300 meters contour interval), water areas (swamps, rivers, lakes and all water areas) and cultural information (roads, town, cities, place names, and general land use) in symbols; there are 55 map sheets for scale 1:250,000 and 972 map sheets for scale 1:50,000. All these series represent map information cited earlier and follows the standard codes and symbols for topographic maps. Contour interval for the scale 1:250,000 is 100 meters while 20 meters is the contour interval for the 1:50,000 scale of topographic map series.

The 1:50,000 series was prepared by the US Army Map Service and published in 1953. Updating has been made for these series but still not available to the civilian surveying and mapping community. One basic difference in the updated series is the format which lessens the number of map sheets for the whole country. The 1953 edition and currently being used for almost all surveying and mapping activities is in the format of 10 minutes latitude and 15 minutes longitude of each neatline dimension. The updated edition is more or less a square being 15 minutes both latitude and longitude for its coverage.

The 1:1,000,000 and 1:250,000 series both have aeronautical chart information for navigation purposes. The transparencies of these two (2) series are available in the BSM and subsequently in the Center.

VI-4.0

LIST OF EQUIPMENT

Research and Survey Department

<u>Room Name</u>	<u>Equipment</u>	<u>Qty</u>	<u>Remarks</u>
1. ALMED Division			
a) Land Resources Inventory Section			
	Soil Color Chart	3	
	Soil Auger	4	
	Soil Core Sampler	2	
	Soil Core Cylinder	34	set
	Permeability Meter	1	
	Hardness Meter	3	
	Soil Boring Stick	4	
	Packet Size Altimeter	3	
	Compass	3	
	Stereoscope Mirror	1	
	Tracking Device	1	
	Packet Stereoscopes	4	
	Binoculars	1	
	Electric Planimeter	7	
	Current Meter	1	
	Water Sampler	2	
b) Common Use			
	Personal Computer	4	
	Serial Printer	2	
2. Soil Survey Division			
a) Soil Survey Interpretation Section			
	Soil Color Chart	4	
	Soil Auger	4	
	Soil Core Sampler	2	
	Soil Core Cylinder	33	set
	Permeability Meter	1	
	Hardness Meter	3	
	Soil Three Phase Analyzer	1	
	Soil Boring Stick	4	
	Packet Size Altimeter	3	
	Compass	3	
	Stereoscope Mirror	1	
	Tracking Device	1	
	Packet Stereoscopes	3	
	Binoculars	1	
	Electric Planimeter	5	
	Stereo Zoom Transfer Scope	1	
b) Common Use			
	Personal Computer	2	
	Serial Printer	1	
3. Soil Conservation & Management Div.			
a) Soil Conservation Planning Section			
	Soil Color Chart	2	

	Soil Auger	2	
	Soil Moisture Meter	2	
	Soil Core Sampler	2	
	Soil Core Cylinder	33	set
	Permeability Meter	1	
	Corn Penetrometer	2	
	Hardness Meter	3	
	Soil Boring Stick	1	
	Pocket Size Altimeter	3	
	Compass	3	
	Stereoscope Mirror	1	
	Tracking Device	1	
	Pocket Stereoscopes	2	
	Theodolite, Universal	1	
	Theodolite, Transit	1	
	Binoculars	1	
	Electric Planimeter	2	
	Auto Mechanical Compactor	1	
	ASTM Sieve Set	1	
	Slump Test Apparatus	1	
b) Common Use	Personal Computer	2	
	Serial Printer	1	
4. Laboratory Service Div.			
n) Plant Grinder Room	Plant Grinder, Big Type	2	
	Plant Grinder, Small Type	1	
s) Plant Drying Room	Plant Drier	2	
c) Soil Grinder Room	Jaw Crusher	2	
	Vibration Sieving Machine	1	
d) Heavy Metal Eliminator Room	Heavy Metal Eliminator	1	
e) Special Assay Lab	Auto Dilutor	2	
	Auto Titrator	2	
	Magnetic Stirrer	2	
	Magnetic Stirrer w/ Hot Plate	2	
	Pipette Washer	1	
f) Shaker Rm#1	Multi Shaker	2	
g) Water Skill Rm#1	Water Skill	1	
h) Hot Room	Temperature Control oven	1	
	Muffle Furnace	2	
i) Soil Characterization Room	Auto Dilutor	1	
	Auto Titrator	1	
	Magnetic Stirrer	1	
	Mag. Stirrer w/ Hot Plate	1	
	Heavy Metal Eliminator	1	
	Multi Tube Drier	1	
	Temperature Control oven	1	
	Muffle Furnace	1	

j)	Waighing Room	Electronic Top Loading Balance	3
		Electric Analytical Balance	3
		Platform Balance	1
k)	Instrument Rm No. 3	Electric Conductivity Meter	1
		pH Meter	2
		Atomic Absorption Flame Spectro Meter	3
		Spectro Photo Meter	2
		Magnetic Stirrer	1
		Liquid Chromato Graph	1
		Organic Carbon Analyzer	1
l)	Nitrogen Distra- tion Room	Auto Titrator	1
		Magnetic Stirrer	1
m)	Fume Hood Room	Hot Plate	2
		Semi Micro Kjeldahl Digester	4
		Macro Kjeldahl Digester	2
		Fume Hood, Regular	3
		Fume Hood, Perchloric	2
n)	Physica Lab	Vacuum Pump	1
		Actual Volume Meter	1
		Pipette Analyzer	2
		Volume Weight Tester	1
		Liquid Limit Device	1
		Moisture Retention Meter	1
		Sand Filler Kit	1
o)	Centrifuge Room	High Speed Centrifuge w/ Ref	1
		Centrifuge	1
		Shaker	2
p)	Water Still Rm#2	Water Still	1
q)	Hot Rm#2	Hot Plate	2
		Water Bath	1
r)	Inoculant Room	Clean Bench, vertical type	1
		Clean Bench, Horizontal type	1
s)	Sterilizer Room	Auto Clave	2
		Dry Air Sterilizer	1
t)	Biological Preparation Room	Incubator	1
		Freezer	1
		Refrigerator	1
u)	Culture Room	Incubator	1
v)	Water Rm	Water Still	1

5. Soil Water Research Div			
a) Instrument Rm#2	Electric Conductivity Meter		1
	pH Meter		1
	Atomic Absorption Flame Spectro		2
	Meter		1
	Spectro Photometer		1
b) Fertilizer & Fertility laboratory	Auto Diluter		1
	Auto Titrator		1
	Magnetic Stirrer		1
	Mag Stirrer w/ hot plate		1
	Pipette Washer		1
c) Mineralogy Lab	Centrifuge		1
	Auto Diluter		1
	Magnetic Stirrer		1
	Mechanical Stirrer		1
d) X-ray, DTA Room	X-ray Diffraction		1
	DTA-TGA Analyzer		1
e) Micro Scope & Weighing Room	Biological Microscope		1
	Polarizing Microscope		1
	Electric Top Loading Balance		1
	Electric Analytical Balance		1
f) Biological Lab	pH Meter		1
	Shaking Bath		1
	Test Tube Mixer		1
	Gas Chromatograph		1
g) Common Use	Personal Computer		1
	Serial Printer		1
6. Cartography Division			
	Process Camera		1
	Whirler		1
	Printing Frame		1
	Offset Proof Press (2 color)		1
	Supporting Materials for		
	Printing Equip		1 U.S.
	Special Computer		
	Serial Printer		
	Plotter		
7. Water Research Div			
a) Common Use	Personal Computer		1
	Serial Printer		1
8. Lab Serv Div & Field/ Water Research Div			
a) Common Use	Lab Table w/ Sink		1
	Lab Table w/ Sink		1
	Lab Table w/ Sink		1

Side Table (2.4 m)	23
Side Table (1.5 m)	5
Side Table (1.2 m)	42
Side Table (0.9 m)	16
Corner Table	10
Sink Table (1.5 m)	22
Sink Table (0.9 m)	14
Working Table (1.8 m)	3
Lab Glass Wear	2
	1 L.S.

2) Special Project & Services Department

<u>Room Name</u>	<u>Equipment</u>	<u>Qty</u>
1. Satellite Center	SSB/HF Telecommunications	13

3) Administrative Department

<u>Room Name</u>	<u>Equipment</u>	<u>Qty</u>
1. Administrative Div	Personal Computer	1
	Serial Printer	1
2. Finance Div	Personal Computer	1
	Serial Printer	1
3. General Serv Div	Vehicles, Station Wagon	4
	vehicles, Pick Up	4
	Copier	1
	Laminating Machine	1

<u>Room Name</u>	<u>Equipment</u>	<u>Quantity</u>	<u>Remarks</u>
	Semi Micro Kjeldahl	12	
	Digester		
	Rain Gauge	12	
	Thermo-Psychrometer	12	
	Wind Direction - Anemometer	12	
	Sunshine Recorder	12	
	Evaporation Pan	12	

3) Training & Information Dissemination Department

<u>Room Name</u>	<u>Equipment</u>	<u>Quantity</u>	<u>Remarks</u>
1. Training Div.			
a) Lecture Room	Video Projector	1	
	Video Screen	1	
	Slide Projector	1	
	Slide Screen	3	
	Over Head Projector	1	
	OHP Screen	3	
	Microphone, Tie Pin Type	1	
	Microphone w/Stand	1	
	Amplifier-Mixed w/Root	1	
	Speaker	1	
	Video Deck	1	
b) Convention Hall	Video Projector	1	
	Video Screen	1	
	Slide Projector	1	
	Slide Screen	1	
	Over Head Projector	1	
	OHP Screen	1	
	Crystal Microphone	1	
	Microphone w/Stand	1	
	Speaker	1	
	Video Deck	1	
	Recording	1	

<u>Room Name</u>	<u>Equipment</u>	<u>Quantity</u>	<u>Remarks</u>
c) Editing Room	Portable Video Camera	2	
	Editing System	1 L.S.	
	Tape	1	

4) Administration Department

<u>Room Name</u>	<u>Equipment</u>	<u>Quantity</u>	<u>Remarks</u>
1. Administration Div.	Vehicles, Micro Bus	1	

(Phase II)

1) Integrated Soil Resources Information System Department

<u>Room Name</u>	<u>Equipment</u>	<u>Quantity</u>	<u>Remarks</u>
IBRIIS	Main CPU	1	L.S.
	Magnetic Disk Unit	1	L.S.
	Magnetic Tape Unit	1	L.S.
	Line Printer	1	
	Terminal Display	10	
	Personal Computer	2	
	Serial Printer	2	
	XY Plotter	1	

2) Special Project & Services Department

<u>Room Name</u>	<u>Equipment</u>	<u>Quantity</u>	<u>Remarks</u>
1. Remote Sensing Div.	Graphic Display	1	
	Hard Copy	1	
	Dyna Scanner	1	
	Photo Printer	1	

Note : Those equipment marked with * will be provided subject to the implementation of the technical cooperation for Remote Sensing by the Government of Japan.

2. Satellite Center

a) Regional Laboratory	Spectro Photometer	12	
	Electric Oven	12	
	Top Loading Balance	12	
	Hot Plate	12	
	Water Still	12	
	pH Meter	12	
	Electric Conductivity Meter	12	
	Flame Photo Meter	12	
	Mechanical Stirrer	12	
	Viscosity Analyzer	12	
	Fume Hood	12	
	shaker	12	

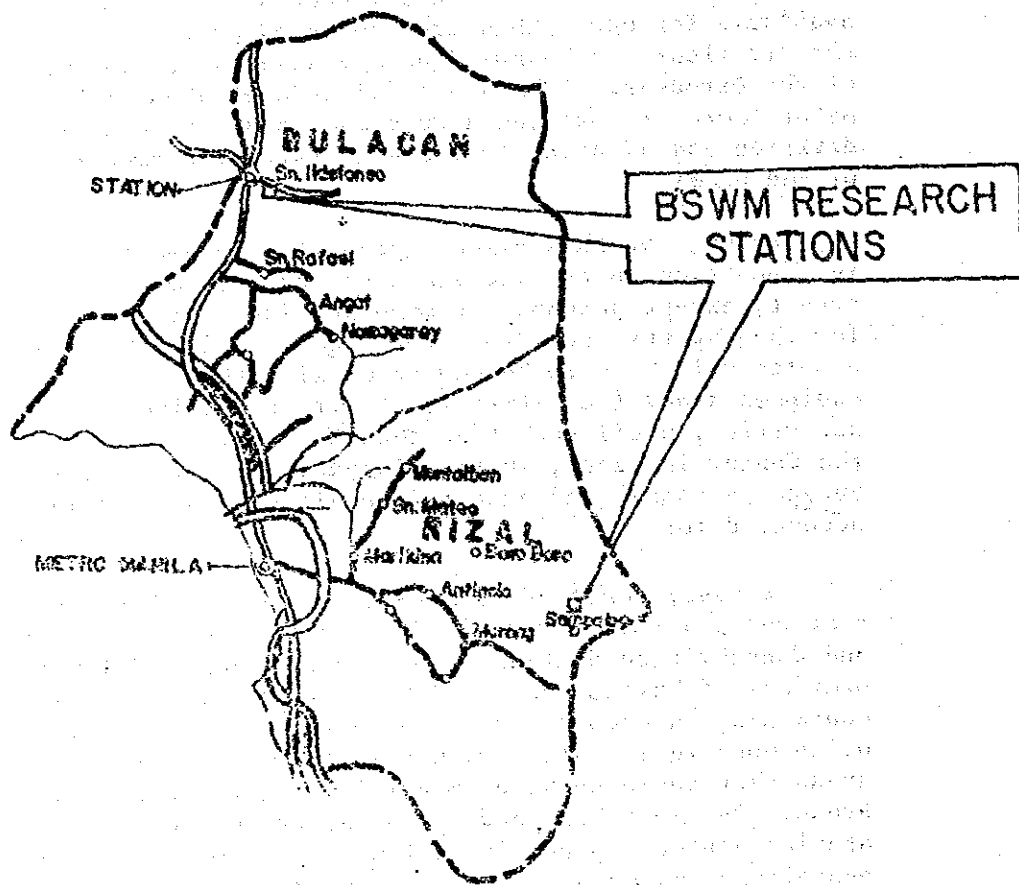
V - 5 Present condition of buildings and facilities (to accommodate experts and for their work)

It is desired that technical cooperation starts in middle of 1989. At about this time, the Soils Research and Development Center is under construction as part of Phase I of the Grant Aid Project. In the interim, the present site of the BSWM in Sunvesco Bldg. located at Taft Avenue and T.M. Kalaw in Manila can accommodate and provide office spaces for a number of experts under the technical cooperation project.

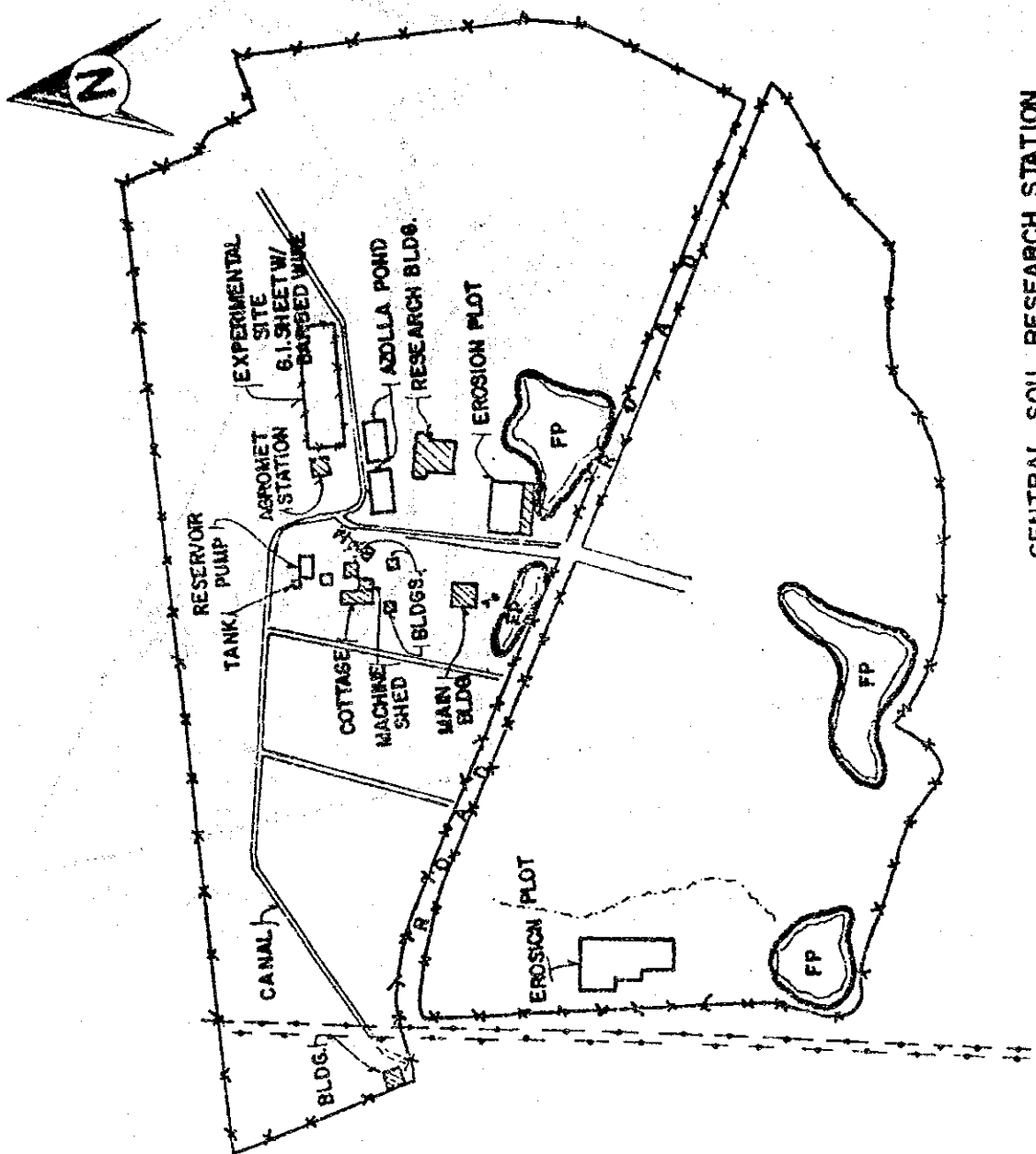
As a result of the reorganization that took effect in July of 1988, there occurs vacant spaces readily available for use. This area referred to is located at the 3rd floor of the building and adjacent to the Office of the Director. It has a total area of about 180 sq. meters more or less and accessible to all technical division and adjacent to the administrative amenities of the bureau.

Except for this office space, the bureau is not in a position to provide vehicles for each of the expert, except perhaps a common service vehicle both for the experts and bureau personnel. Still the experts will have to be contented with the existing equipments and facilities for their respective activities, until such time that the facilities for the Center is ready, where all spaces both for Center/Bureau personnel and experts/consultants are properly accounted for.

However, there are two research and conservation stations proximate to Manila. This is the Soils Research and Conservation Station in Buenavista, San Idefonso, province of Bulacan about 50 kilometers from the Center, containing an area of about 35 hectares more or less, difference in elevation within 10 meters depicting lowland areas that could serve as model for irrigated and rainfed areas. On the other hand, Tanay Research and Conservation Station depicts upland Agriculture. The site is almost equidistant as Buenavista but lies east of Manila on Antipolo Hills and at the base of Sierra Madre Mountains. The difference in elevation between the lowest and highest point in the area is about 120 meters more or less. Models for sloping agricultural land technology could be piloted on this site. It contains an area of about 30 hectares more or less. Both stations have office spaces and housing facilities. Buenavista station has laboratory facility.

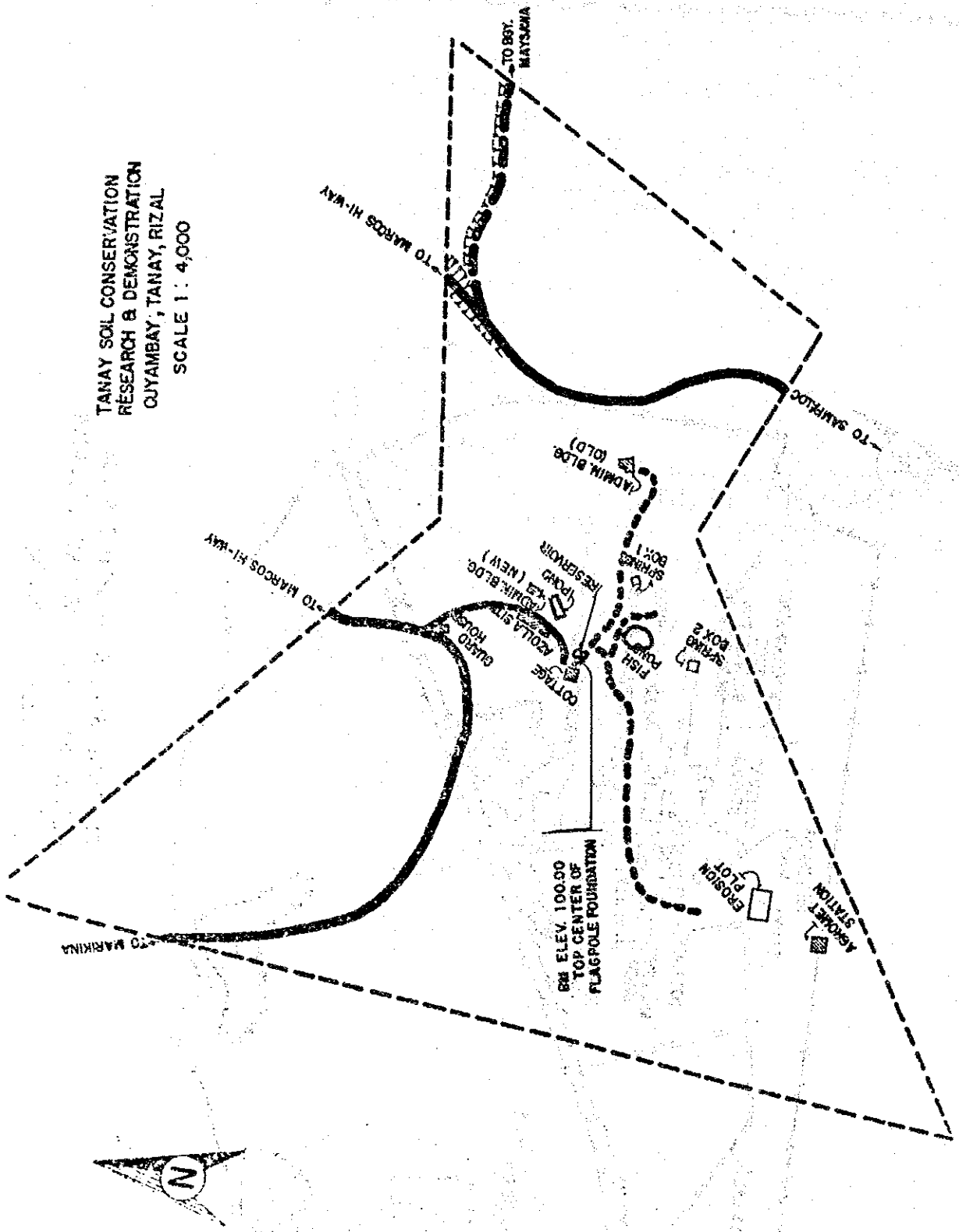


LOCATION MAP



CENTRAL SOIL RESEARCH STATION
 BUENAVISTA, SN. ILDEFONSO, BULACAN
 SCALE 1 : 4,000

TANAY SOIL CONSERVATION
 RESEARCH & DEMONSTRATION
 CUYAMBAY, TANAY, RIZAL
 SCALE 1 : 4,000



V - 6 Members of Project Management Office (PMO), Bureau of Soils and Water Management (BSWM): SOILSEARCH Center

<u>Name/Degree</u>	<u>Position</u>
Mr. GODOFREDO N. ALCASID, JR. Bachelor of Science in Agriculture	Director, BSWM and Executive Director, SOILSEARCH Center
Mr. REYNALDO P. BAJAR B.S. Engineering in Cartography Associate in Engineering Master in National Security	Deputy Executive Director, PMO and Head of Cartographic Operations Division, BSWM
Mr. CASIMIRO R. MORA B.S. in Agriculture (Major in Soil Science)	Director, Administrative Operations, PMO, Consultant, BSWM and Project Coordinator, Rain Stimulation, Coordinating and Monitoring Operations
Dr. ROCELIO N. CONCEPCION B.S. in Agriculture MPS Agriculture Ph D	Director, Technical Operations PMO and Head of Agricultural Land and Management Evaluation Division, BSWM
Mr. EDUARDO A. BRION	General Services Officer, PMO and Supply Officer III, BSWM
Ms. ELSIE A. BALAGTAS B.S. Pharmacy	Finance Officer, PMO and Management and Audit Analyst, BSWM
Mr. NESTOR M. TICZON B.S. in Agriculture	Technical Services Officer, PMO and Sr. Agricultural Development Specialist, BSWM
Engr. CONRADO R. MARTIN B.S. Mechanical Engineering	Soil Conservation Management, PMO and Chief Agricultural Development Specialist, BSWM
Ms. CONSTANCIA R. GANTIOQUI B.S. in Chemistry Post Graduate Studies - Soil Science	Laboratory Services Officer, PMO and Sr. Agricultural Development Specialist, BSWM
Mr. ALEJANDRO B. MICOSA B.S. in Agriculture	Land Use and Remote Sensing Specialist, PMO and Chief Agricultural Development Specialist of Soil Survey Div.

Dr. NORA B. INCIONG
B.S. in Agriculture
M.S.A. -Soils
Ph D - Soils

Engr. CESAR M. MAGADIA
B.S. in Agricultural
Engineering

Arch. CRISENCIO O. SOLANO
B.S. in Architecture

Mr. RENE CAMACHO

Ms. MAGDALENA Q. FAVIS
B.S. in Agriculture

Prof. WILFREDO E. CABEZON
Ph D

Engr. RODOLFO M. LUCAS
B.S. in Agricultural
Engineering

Soil and Water Resources
Research and Training
Specialist, PMO and Supvg.
Agricultural Development
Specialist, BSWM

Landscape Specialist, PMO
and Supvg Agricultural
Development Specialist, BSWM

Architect and Interior
Design Specialist, PMO and
Supvg. Cartographic
Engineer, BSWM

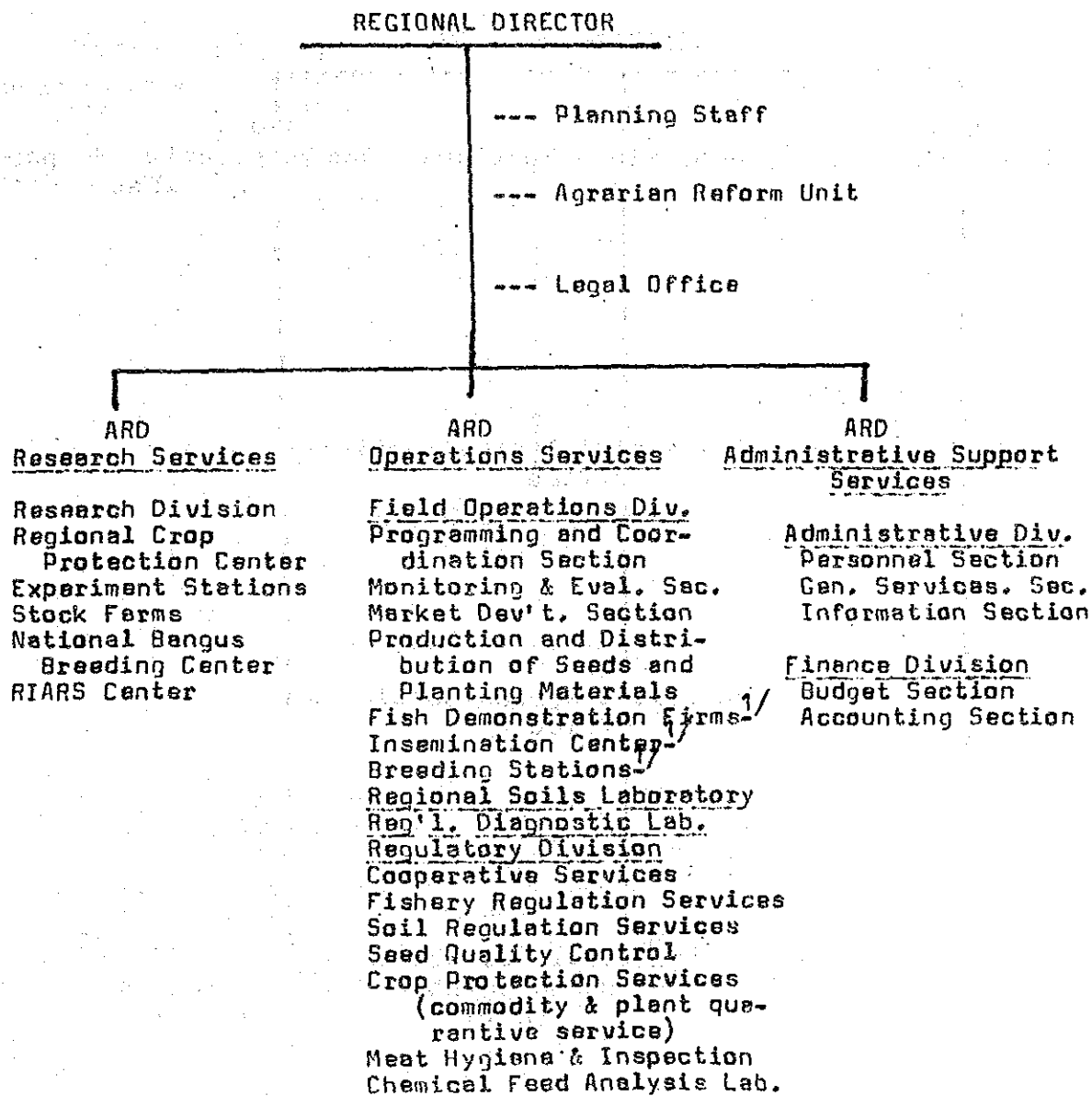
Telecommunication Specialist,
PMO and Head of Maintenance
Unit, BSWM

Development Communication
Specialist, PMO and Supvg.
Agricultural Development
Specialist, BSWM

Management Information
Specialist, PMO, Consultant
to BSWM and Director of U.P.
Los Baños Computer Center

Water Conservation Management
Specialist, PMO and Chief,
Agricultural Development
Specialist, Water Resources
Management Division, BSWM

CHART I. REGIONAL SUPPORT SERVICES



^{1/} Fish Demonstration Farms Insemination Center, Breeding Stations and Soils Laboratory serving specifically provincial operations shall be directly under the Provincial Agricultural Office.

CHART II. LINKAGES OF OPERATIONS.

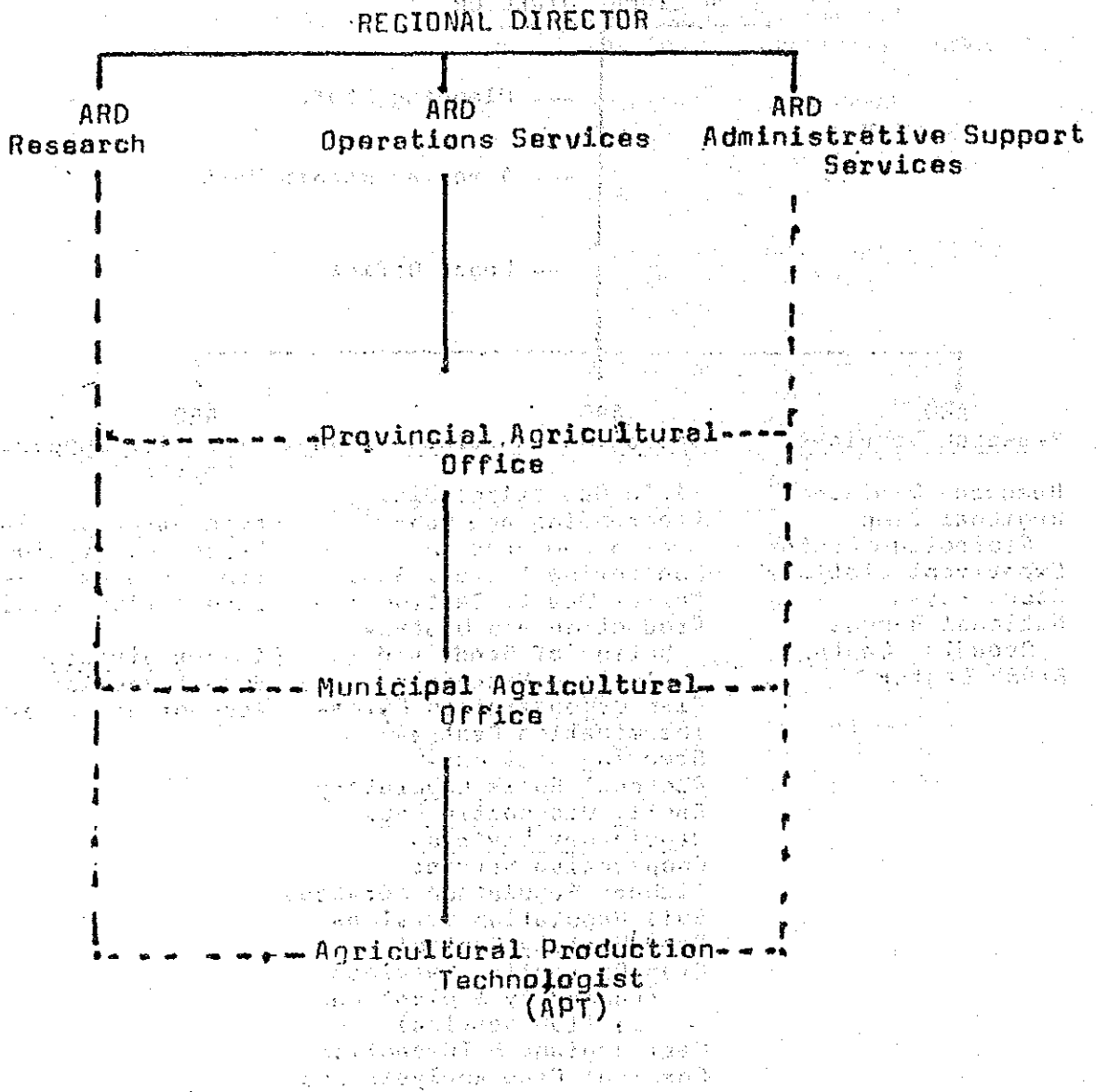
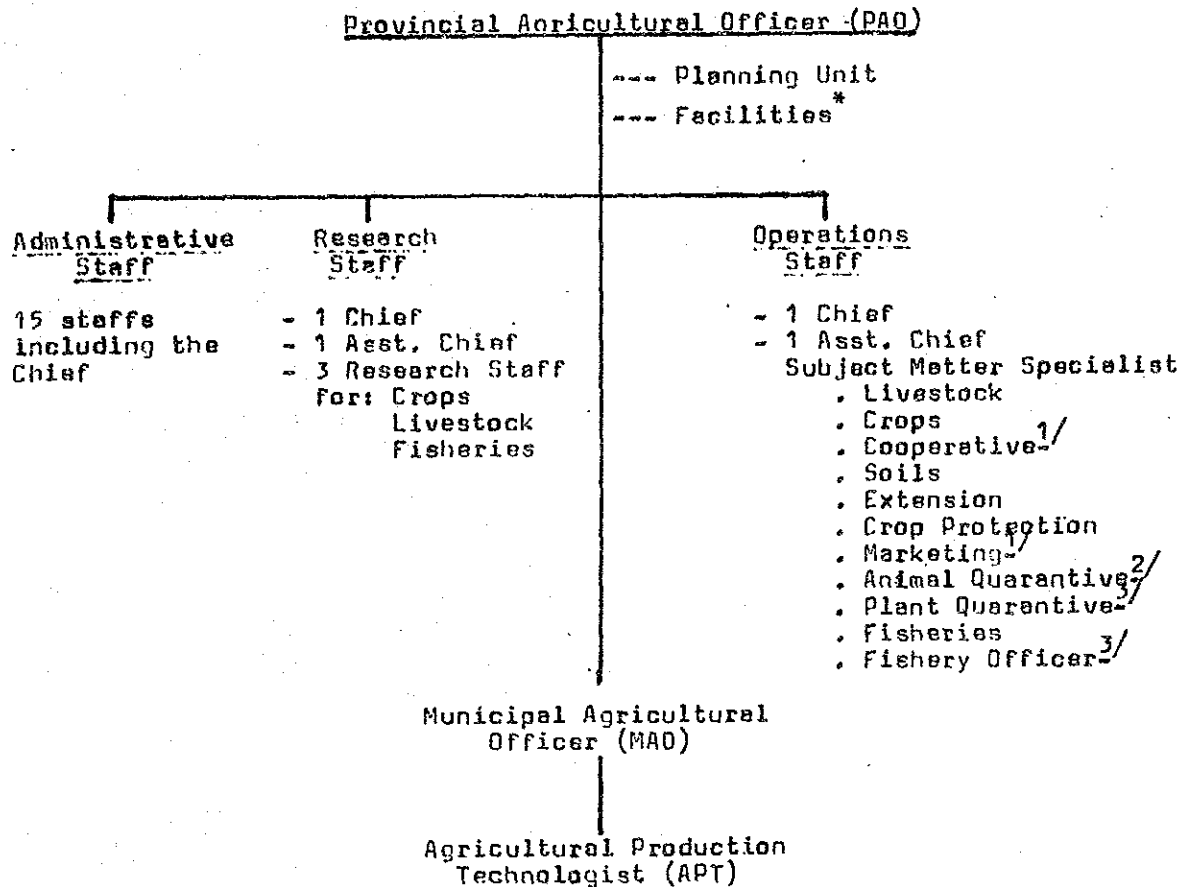


CHART III. PROVINCIAL OPERATIONAL STRUCTURE



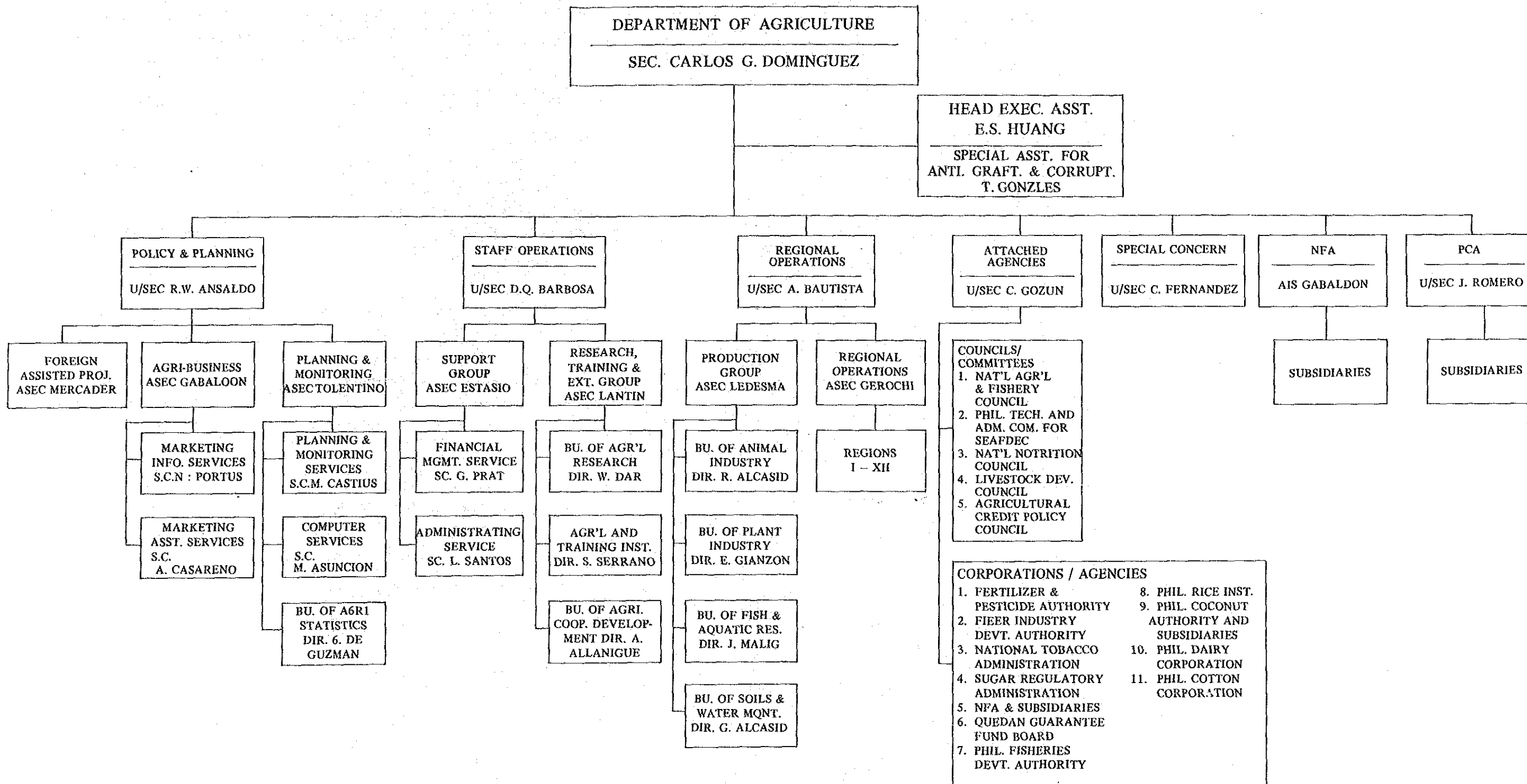
^{1/} Iloilo & Negros Occidental has one (1) SMS for cooperatives & one (1) SMS for marketing, Aklan, Antique, CapiZ, and Guimaras has only one (1) SMS for cooperatives and Marketing.

^{2/} Iloilo & Negros Occidental has two (2) Animal Quarantine Officer, other province with only one (1).

^{3/} Aklan, Antique, CapiZ, Guimaras has only one (1) SMS for Plant Quarantine Officer and Fishery Officer.

* Facilities serving provincial operations are directly under the PAO including soils laboratory.

DEPARTMENT OF AGRICULTURE ORGANIZATIONAL STRUCTURE



Questionnaire on soil and suitability classification

1. objective of newly started semi-detailed soil survey (1:50,000) and its benefit?
2. Relation between soil series established on reconnaissance soil survey in 1940's and 1950's, and soil series established on semi-detailed soil survey ?
3. Adjustment of soil series established on reconnaissance soil survey to soil series (or soil type) of soil taxonomy ?
4. Necessity of improvement or supplement on soil taxonomy classification system on the base of problem indicated by International Soil Classification Workshop, e.g. ICOMAND, ICOMAQ, ICOMIAC, ICOMAX and so on and natural features, climate, cropping system (land use), culture and so on in Philippines ?
5. Performance of soil analysis, e.g. physical and chemical characteristics, clay mineral identification for soil taxonomy classification and soil suitability classification ?
6. Necessity of improvement or supplement on soil suitability classification by FAO system with regard to Philippines' special features and with reference to classification method of other country ?
7. Preparation of new manuals on soil survey method and its classification method, soil analysis method and soil suitable classification method and so on ?

In connection with format for field and laboratory soil records for computer-based data management system (GIS), it is necessary.

SOILS SURVEY DIVISION

SOIL AND SUITABILITY CLASSIFICATION

1. Objectives of the newly started semi-detailed soil survey (1:50,000) and its benefit?
 - a) To be able to classify the Philippine soils at scale of 1:50,000 using The Soil Family Classification System in order to answer the information directly needed in Soils Research work and the urgent transfer of technology.
 - b) To be able to benefit from the advantage of using the system, the system being based on criteria that are directly describable in the field and properties that are measurable in the laboratory and this system being an improvement of the old published soil series in small scale map.
 - c) To be able to provide adequate field and laboratory data for further characterization of the soils.
2. Relation between soil series established on reconnaissance soil survey in 1940's and 1950's and soil series established on semi-detailed soil survey?
 - The old soil series are presented in small scale maps ranging from 1:75,000 to 200,000. A soil series embraces the level land up to mountainous land.
 - The old series does not consider the use of physiography, soil relationship and especially the genesis and parent material influences on the system of classification.
 - The map is weak and does not conform to the boundary of the contour/slope of the land for which soils itself are directly related.
 - Weakly characterized and the old soil series are highly variable.

The new semi-detailed soils survey is an improvement of the old system in terms of the following:

- bigger scale - 1:50,000 scale (standard)
- use of aerial photographs and/or topo maps in soil mapping in order to separate clearly the soil boundaries, soils-physiography interpretation using aerial photo interpretation techniques or terrain quantification.

- all units are supported with soil description from pit/ auger holes and also better sampling procedure for proper laboratory analyses according to the need of the soil taxonomy system.
3. The soil-physiography component of the ALMED study in each provinces on land management evaluation which is published at 1:50,000 scale becomes very useful for our Soil Family study because in many provinces they have classified the land unit (LMU) also at subgroup. We therefore made use of the subgroup classification initially in our discussion of the soils to save substantial reconnaissance time, effort and money.
 4. The Soils Survey Division still need to solve some major problems e.g. availability of base map, aerial photographs, genesis of soils and data analysis and interpretation.
 5. Inadequate standard criteria used for the rating of soil units especially for chemical properties (micro nutrients) considered significant like Fe, Al, Bo, cobalt, etc. Clay minerology is based only on computation. Methods of analyses needs to be improved.
 6. There is need to equip the staff with sufficient data and its interpretations for soil suitability classification. Soil suitability ratings may need to be based not only on qualitative but also quantitative data.
 7. The division has yet to rproduce a new manual for operation and data interpretation using:
 - laboratory properties and criteria
 - legend for soil genesis and taxonomy
 - data computerization

IMPLEMENTATION SYSTEM (SOILS SURVEY) - 1990 (New Proposal)

The Soils Survey Staff with base station (Manila) shall undertake the training and organization of soil survey staff and project execution as well in the regions on a cooperative and complementary bases. These activities are:

- 1) Basic Soil Surveys - mapping system and collection of soil descriptions that may best answer the need for proper soil classification both in U.S. and Japanese Soil Taxonomy System.
- 2) Soil Sampling for: (1) soil museum; (2) laboratory analysis (fertility and taxonomic purposes completing both requisites for U.S. and Japanese Soil Classification System).

- 3) Updating of Soil description nationwide at family level and placement of its equivalent in the Japanese Soil Classification System and USDA System.
- 4) Classification of soils adapting mapping legend for consistency at national and regional scale.
- 5) Execution of projects both for planning for agricultural development and research purposes.
- 6) To advocate the explanation of soil resources nationwide through the used of computer with mapping capability using the facilities envisioned (LANDSAT/SPOT Receivers).

フィリピン土壤研究開発センター計画事前調査団

各省会議資料

昭和63年10月26日10:30時～
於外務省507A会議室

国際協力事業団
農業開発協力部
農業技術協力課

目 次

1. 要請の背景と経緯

2. 要 請 内 容

3. 技術協力の内容

4. 対 応 方 針

- (1) 調査内容・項目
- (2) 調査団構成
- (3) 派遣期間
- (4) 主な訪問先

5. 参 考 資 料

別添 1 Minitue (案)

5/25(水) 5/26(木) 5/27(金) 5/28(土) 5/29(日)

5/30(月) 5/31(火) 6/1(水) 6/2(木) 6/3(金)

6/4(土) 6/5(日) 6/6(月) 6/7(火) 6/8(水)

6/9(木) 6/10(金) 6/11(土) 6/12(日) 6/13(月)

6/14(火) 6/15(水) 6/16(木) 6/17(金) 6/18(土)

1. 要請の背景と経緯

フィリピン共和国政府は1967年以降6次に亘る国家開発計画を策定し、経済・社会開発に尽力してきたが、1979年の第2次石油危機の影響でフィリピン経済は低迷し始め、1983年8月の政情不安を契機に債務危機が加わり、1984年には独立以来初めて国民総生産（GNP）のマイナス成長を記録した。

このためフィリピン国政府は、経済開発政策の見直しを行い、同年12月に中期経済開発計画（1987～1992年）を発表し経済の復興に着手した。この計画はフィリピンの経済成長と国民生活の向上を目指すものであり、その基本的目的として貧困の撲滅雇用機会の増大等を定めている。

このため「フ」国は、国内総生産（GNP）で全体の約30%を占め、全労働者の半数が従事する農林水産部門を開発政策の最重点部門と定め、基本政策として小規模農業の収入増加、生産性の向上食料自給をその目標に掲げている。

また、農業の生産性と収益性の向上を図るためには、農地改革を通じた自作農の増大並びにその育成、合理的土地利用体系、実用的営農技術の開発の推進等が不可欠となっている。一方、フィリピン国における農業適地は約1,500万haあり、そのうち土壤特性が把握されているのは僅か4%の60万haに過ぎない。従って、農業政策が目指す生産性と収益性の向上を実現するためには、全農業用地の土壤の調査と特性の把握、適地適作物の研究、農家に対する農業技術の啓蒙を推進していくことが急務とされている。

しかしながら、土壤研究及び土壤関係農業技術開発の中核ともなる農業省の土壤・水管理局は、施設及び機材の老朽化が激しく、手狭となっており、農民に直接被益する行政需要に応えられない状況に立ち至っている。

そこでフィリピン国政府は、土壌・水管理局が現在実施している土壌の調査研究機能を拡充し、併せて土壌情報システムを確立するとともに、営農技術の研修を強化するのに必要な「土壌研究開発センター」の設立を計画し、日本国政府に無償資金協力及び技術協力によるその実施を要請した。

2. 要 請 内 容

フィリピン国政府は重点政策である農業の生産性及び収益性の向上達成に必要な、適正な土壌及び営農技術の開発・普及を行い、また政府・関係機関の活動に必要なサービスを提供し、フィリピン経済の発展に寄与することを目的として、下記事項を中心としたプロジェクト方式技術協力を我国に要請越してきた。

(1) 協 力 課 題

- 1) 土壌調査・研究の実施
- 2) 土壌情報図化作成の促進
(土地利用図、土壌分類図、土壌生産力分級図及びその他の土壌主題図)
- 3) 適正な作付体系及び営農システムの確立
- 4) 水利用研究の実施
- 5) 土壌研究・開発に係る研修普及の実施

(2) 専 門 家 派 遣

- 1) 長期専門家
 - ① 土壌調査
 - ② 土壌保全・管理
 - ③ 土壌肥沃度
 - ④ 肥料評価
 - ⑤ データ加工
 - ⑥ リモートセンシング

2) 短期専門家

(3) カウンターパート研修

3. 技術協力の内容（案）

(1) プロジェクトの目的

フィリピン国の農業の生産性及び収益性の向上達成に必要な、適正な土壌及び営農技術の開発・普及を行い、また政府・関係機関の活動に必要な情報・資料を提供し、フィリピン経済の発展に寄与することを目的として、次の課題につき技術協力を実施する。

- 1) 土壌の研究・開発（調査、分類、評価を含む）
- 2) 土壌の分析及び試験
- 3) 人的資源の資質向上（研修・訓練）
- 4) 水資源の管理・研究

(2) 協力課題

- 1) 土壌調査・研究の実施
- 2) 土壌図化情報作成の促進
（土地利用図、土壌分類図、土壌生産力可能性分級図及びその他の土壌主題図）
- 3) 適正な作付体系及び営農システムの確立
- 4) 水利用研究の実施
- 5) 土壌研究・開発に係わる研修普及の実施

(3) 協力期間

5年間

(4) プロジェクト・サイト

ケソン市

(5) フィリピン側の実施機関

農業省 土壌・水管理局

(無償資金協力による土壌研究開発センター設立後は
同センター)

(6) 日本側の協力内容

1) 派遣専門家

[長期専門家] (7名)

- ① チームリーダー
- ② 業務調整
- ③ 土壌調査
- ④ 土壌肥料
- ⑤ 土壌保全・管理
- ⑥ 水資源管理
- ⑦ 普及方法

[短期専門家]

次の分野に関する専門家

- ① リモートセンシング
- ② 土壌肥沃度
- ③ 人工気象等

2) 研修員受入

土壌調査、土壌保全等の分野のC/Pを年間4名程度
受入れる。

3) 機材供与

予算の範囲内で、プロジェクト活動に必要な機材の供与を行う。

(7) フィリピン側の負担事項

- 1) プロジェクト活動に必要な土地、建物等の提供
- 2) カウンターパート等の配置
- 3) プロジェクト活動に必要なローカルコストの負担

(8) 合同委員会

委員長 農業大臣または農業大臣の指名者

フィリピン側

農業省地域運営次官

〃 生産グループ次官補

〃 土壌・水管理局長

〃 外国援助プロジェクト次官補

〃 計画モニターグループ次官補

国家経済開発庁对外援助室長

国家灌漑庁の代表

フィリピン大学の代表

その他委員長が指名した者

日本側

チームリーダー

業務調整

専門家

JICAフィリピン事務所代表

調査団員

(大使館員はオブザーバーとして

出席できる)

3. 派遣期間

日順	月日	曜日	調査事項
1	11月22日	火	移動：東京 ⇒⇒⇒ マニラ
2	23日	水	打合せ：日本大使館，JICA事務所 表敬：農業省
3	24日	木	協議：農業省
4	25日	金	視察：現地調査
5	26日	土	視察：現地調査
6	27日	日	視察：現地調査
7	28日	月	協議：農業省
8	29日	火	視察：現地調査
9	30日	水	視察：現地調査
10	12月1日	木	協議：農業省，ミニッツ署名
11	2日	金	報告：日本大使館，JICA事務所
12	3日	土	移動：マニラ ⇒⇒⇒ 東京

4. 対応方針

フィリピン政府の本プロジェクトへの要請の背景及び内容を、より詳細且つ正確に把握すること等を目的として、下記の実施計画(案)により事前調査団を派遣する。

[実施計画案]

1. 調査内容・項目

- (1) 要請の背景
- (2) 計画の内容
- (3) 国家経済社会開発計画等における本プロジェクトの位置付け
- (4) 現地事情
- (5) 協力実施上の問題点・留意点
- (6) その他(ミニッツの検討・署名、89年度計画の検討他)

2. 調査団構成

団 長	総 括	農林水産省
団 員	協力企画	農林水産省
〃	土壌調査	農林水産省
〃	土壌評価	農林水産省
〃	業務調整	J I C A

4. 主な訪問先

農業省

日本大使館

5. その他

(1) 今後の日程

昭和64年 3月	R/D署名予定 (2名程度のR/Dミッション派遣 又はJICA事務所長署名予定)
昭和64年4～5月	長期専門家3名派遣予定 (リーダー、業務調整、土壌調査)
昭和64年12月	長期専門家4名派遣予定
昭和65年 2月	計画打合ミッション派遣予定

(2) 無償資金協力

1) 第1期分

内 容:	研究本館の建設と調査研究用機材の 調達
概算事業費:	約17億円
日 程:	63年10月7日 閣議決定 63年10月24日 E/N 64年 3月 着工(予定) 65年 2月 完成(予定)

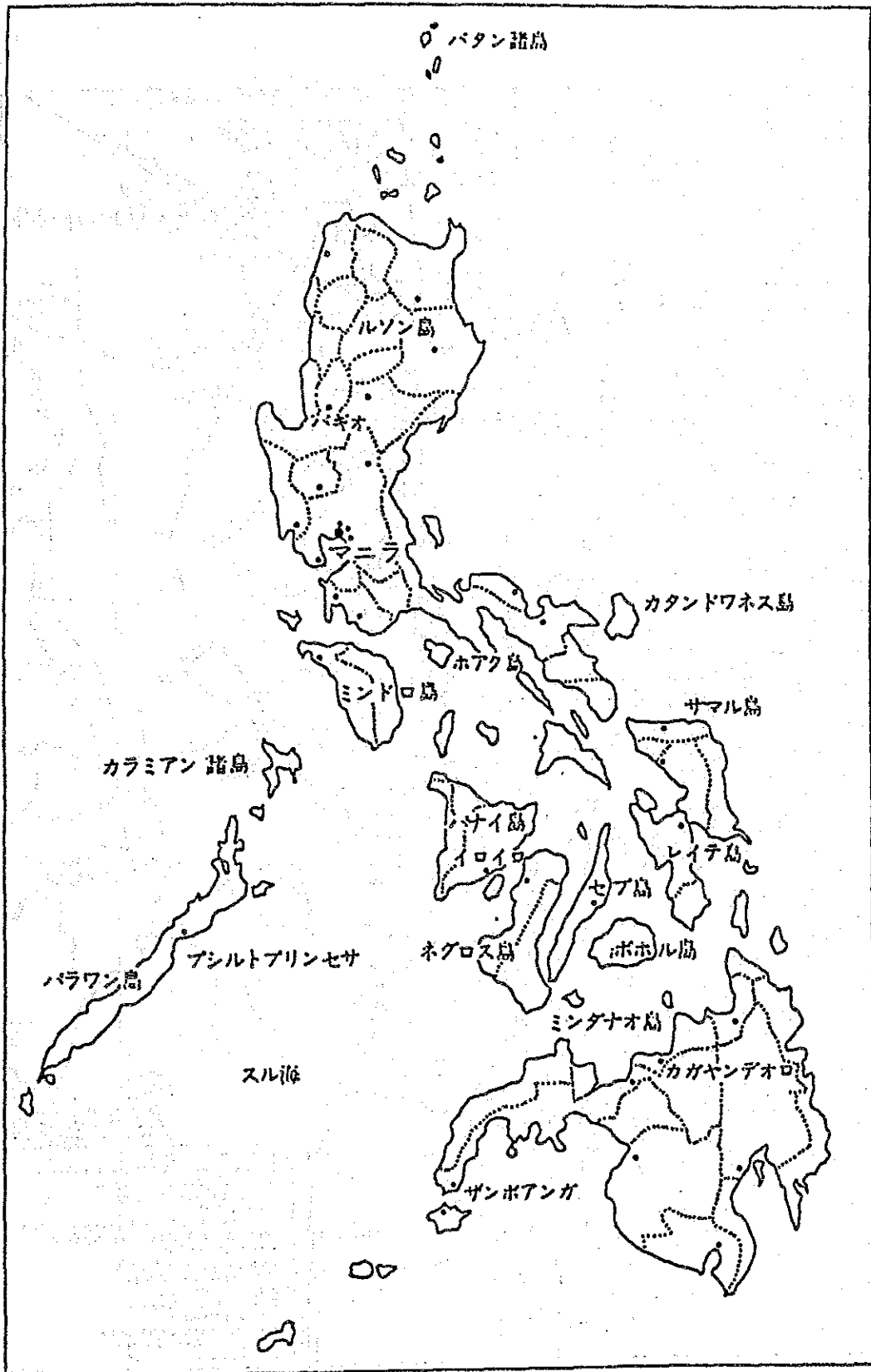
2) 第2期分

内 容： 研究広報棟の建設と研修・情報関連
機材の調達

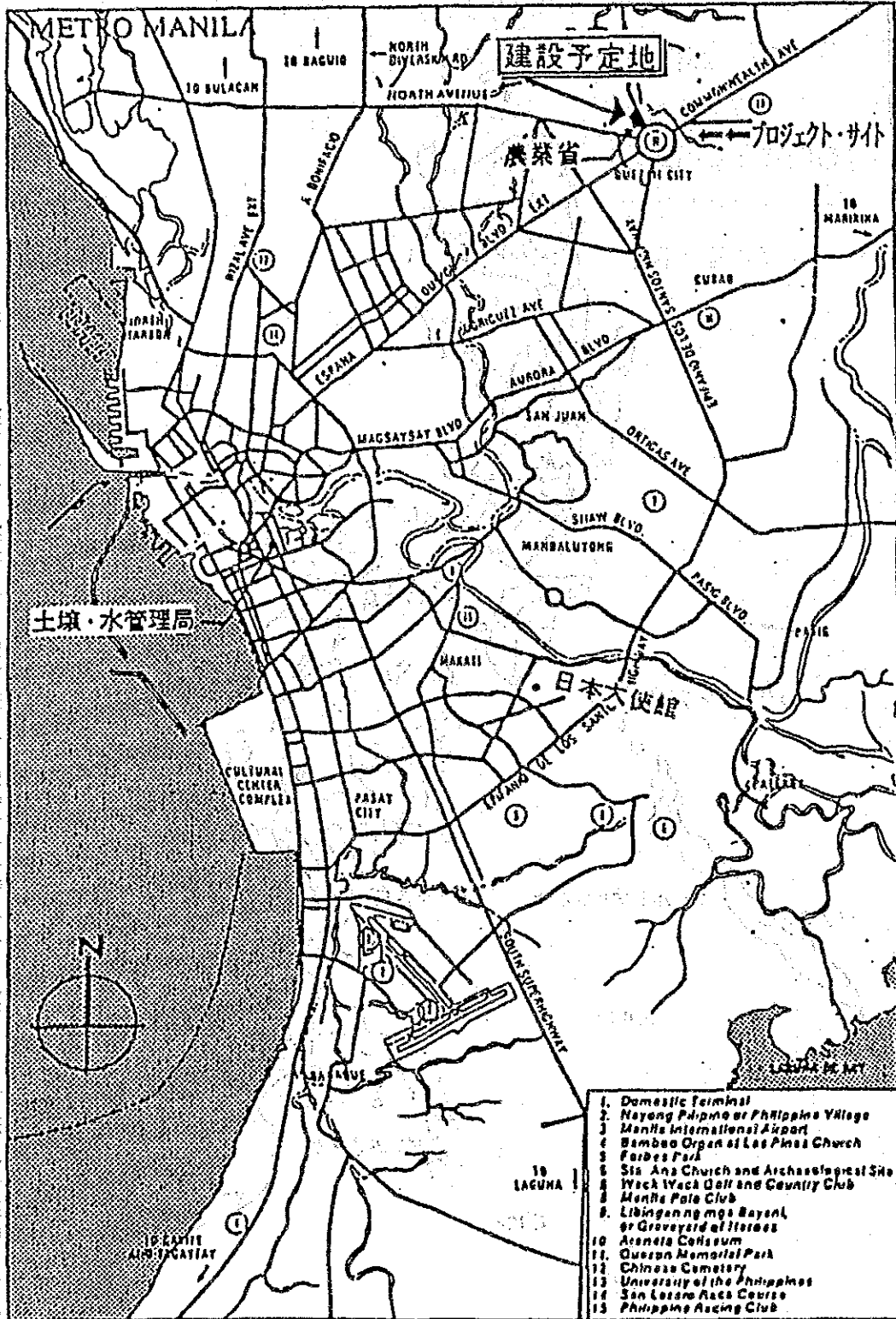
概算事業費： (約12億円)

日 程： 64年 6月 閣議決定予定
64年 7月 E/N予定
64年11月 (閣議決定2週間後)
65年 9月 着工(予定)
完成(予定)

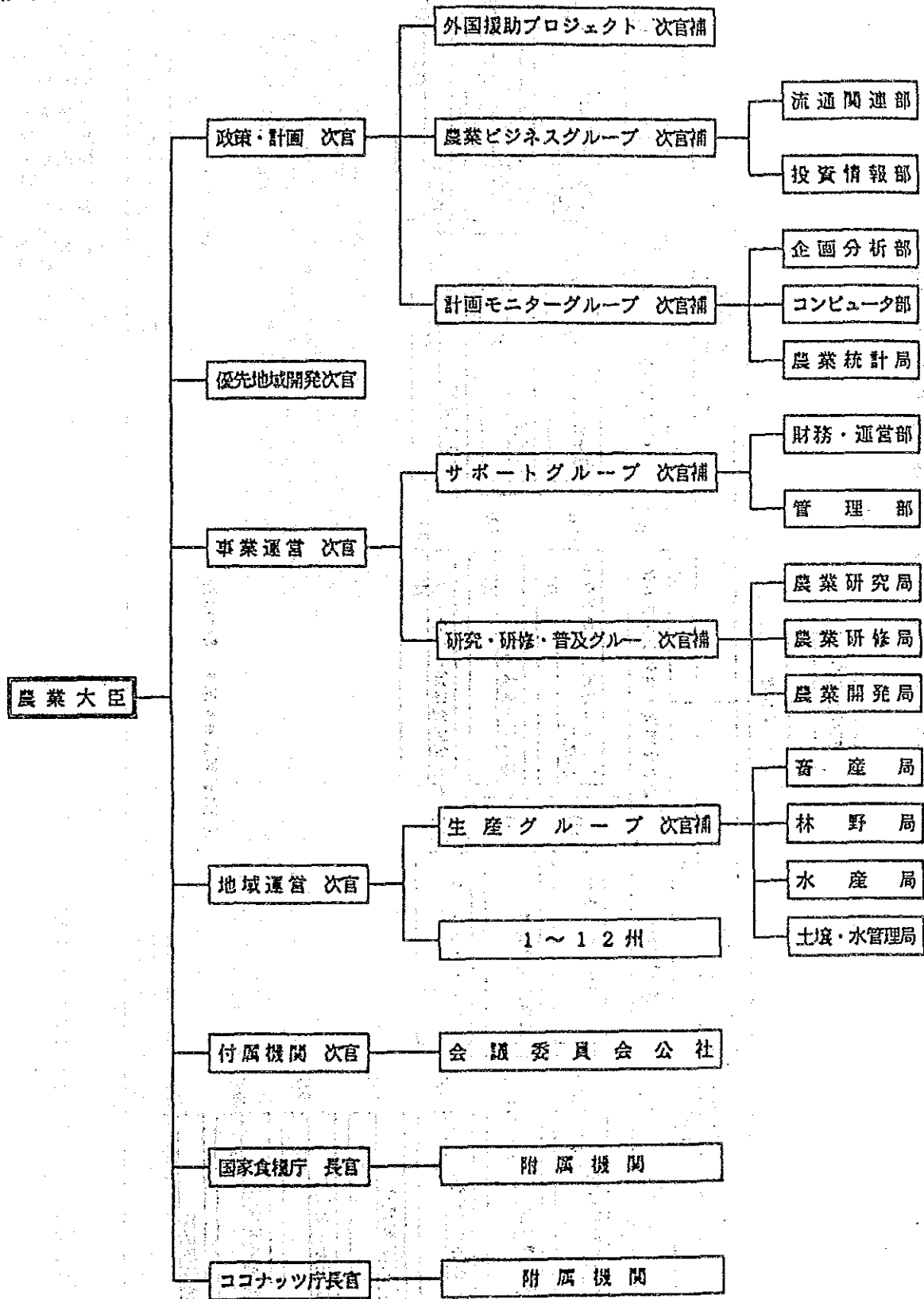
フィリピン共和国



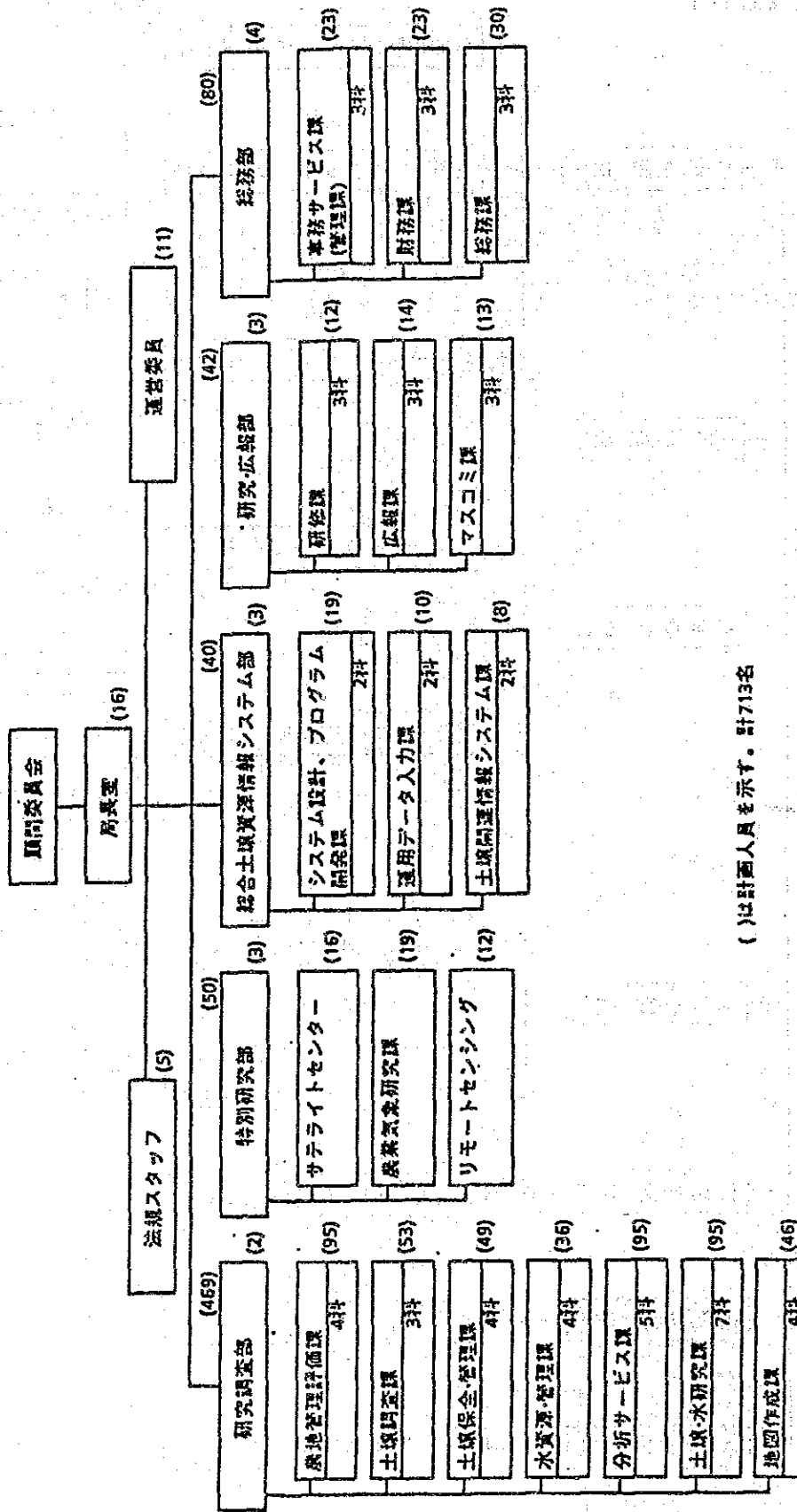
建設計画位置図



農業省組織図



土壤研究開発センター設立後の同センター組織と計画人員構成



()は計画人員を示す。計713名