

CHAPTER 7. PROJECT APPRAISAL

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7-1 Effects of Project Implementation

The establishment of the Center will have the following effects for the Philippines.

(1) Establishment of National Center for Soil and Water Management Research and Development

The Center is designed to function as a national center for soil and water resources research and the accumulation and provision of basic technical information and training in the relevant fields. It will, therefore, be able to provide technical data required for the preparation of policy measures, projects and R & D activities by organizations in both the public and private sectors and by academic institutions. In particular, it is expected to provide technical data required by the Department of Agriculture (42,106 employees) and to conduct the training of the relevant staff. As part of the Department of Agriculture, the Center will conduct the following work.

- 1) Promotion of R & D activities relating to the diversification of agriculture.
- 2) Training engineers of those organizations in the relevant fields and farmers on soil and water management techniques and development.
- 3) Rationalization of plantation management through the evaluation of land productivity and information control.
- 4) Stabilization of market prices through the development of secondary crops for plantations.
- 5) Improved pasture productivity through the development of new varieties while acting as an information center for both public and private organizations.

(2) Smooth Implementation of Soil and Water Management Research and Development

The establishment of the Center will qualitatively improve soil analysis and related service capabilities and will increase the number of cases handled

from the current 260,000 cases a year to 410,000 cases, which will facilitate the smooth implementation of the following.

- 1) Selection of appropriate farmland and crops (including animals) and the transfer of farming techniques to 2.6 million farmers who will be the beneficiaries of agrarian reform.
 - 2) Support of the current construction plans for small reservoirs at 149 sites and promotion of surveys on appropriate reservoir sites for dry field farming.
 - 3) Improvement of agricultural techniques and research and development activities in the relevant fields with the consolidation of soil and land resources information, which is the Center's main objective.
 - 4) Provision of information, including soil maps, for development program planners, researchers, academic institutions, etc. in the agricultural field.
- (3) **Strengthening of Soil and Water Management Research and Development Manpower**

The planned subjects of the training courses to be provided by the Center consist of three groups, i.e. 1) Center staff, 2) agricultural instructors and staff of the Department of Agriculture and 3) leading farmers, etc. In the case of the first group, the training will include the effective and efficient use of improved laboratories and research rooms, various approaches to R & D and the handling of research equipment. In regard to the second group, the training of 178 Department of Agriculture instructors from 12 regions, 72 provinces and two cities will be firstly conducted. The training of 12,000 technical officers (agriculture) of the Department of Agriculture and agricultural planners of 1,200 municipalities will then be conducted in stages. In the recently provided training for local agricultural technicians, soil and water sampling and soil and water analysis, as well as evaluation, were included in 10 out of 12 regions.

These training programs intend to bring about the long-awaited utilization of technical soil reports and maps based on the bottom-up method in order to develop manpower with a strong technical background, which is capable of responding to development demands while working together with ordinary farmers.

(4) Promotion of Agrarian Reform

The main pillar of the agrarian reform which is expected to benefit 2.6 million farmers is the release of 1.23 million ha of public land. The Center will contribute to the fostering and settlement of small-scale farmers through its cooperation with the decision-making process for an economical farming scale, appropriate crops and annual cropping schedule, etc. The Center will also provide the soil and land use data required for the selection of suitable land for farming and for the improvement of dry farming land productivity to cater for the population increase.

(5) Support of Water Conservation and Control Measures

By September, 1987, the BSWM had constructed 88 reservoirs with a total area of 171 ha and a benefitted area of 3,745 ha. The BSWM is currently constructing another six reservoirs and 149 additional reservoirs (total area: 873 ha) are planned in the next seven years. The Center will support these efforts by providing technical data on soil and water resources and on water utilization techniques.

(6) Provision of Land Management and Evaluation Data

The Center will collect and organize data on land characteristics and productivity as well as socioeconomic data on a national scale. By providing reference services for the Department of Agriculture and other related organizations, the Center will further promote agricultural development and land use planning.

(7) Improved Information Service Capability

The establishment of the Center will much improve the information service capability of development officers of local municipalities, libraries of agricultural schools and government organizations in addition to improving the soil map preparation capability.

(8) Improved Survey and Research Capability

At present, the BSWM is capable of handling 260,000 soil analysis cases a year. However, with the establishment of the Center and the provision of analysis equipment at local stations, a further 150,000 cases of soil analysis, which forms the basis of fertilizer design, will be possible. The production capacity of rizhobia, which is used to improve the productivity of beans, will be increased by 20,000 bags (100g/bag) in the second year and 160,000 bags

in the fifth year, while the number of quality inspections of organic and inorganic fertilizers will be increased from 3,000 to 5,000 a year.

(9) **Promotion of Soil and Water Research and Development**

Soil and water research and development activities are currently conducted not only at a national level but also at regional and provincial levels. The establishment of the Center will promote information exchange between research organizations, stimulating cooperation in and increasing the subject scopes of these activities. Research and development themes will include the following.

- 1) Clarification of soil characteristics and soil improvement based on the clarification results.
- 2) Examination of responsive relationship between soil and crops and of fertilizer application criteria.
- 3) Appraisal of research and development methods for the transfer of agricultural technologies.
- 4) Prevention of soil discharge.
- 5) Promotion of soil research and development of practical farming techniques.
- 6) Characteristics and control of problematic soils.
- 7) Nitrogen fixation system.
- 8) Analysis of effective ingredients of traditional fertilizers.
- 9) Effectiveness of algae as a fertilizer and their use in paddy fields.

7-2 Appropriateness of the Project

Based on the examination of the requested Project contents by the Government of the Philippines, field study results and domestic analysis results, the establishment of the Soil Research and Development Center with the facilities and objectives described in the present report is considered both necessary and highly desirable.

(1) Finance

As the Government of the Philippines is giving policy priority to agricultural development, it has drastically increased the annual budget for the Department of Agriculture since Fiscal 1987. It also affords high budget priority to those projects receiving foreign aid. If the Project is implemented, the Foreign-Assisted Projects Support Fund will provide a grant so long as the technical cooperation by the Japanese Government continues.

The operation and maintenance cost will be approximately 77 million Pesos in the starting year 1990 which is 32% higher than the BSWM's working budget for Fiscal 1988 of 58 million pesos. However, budgetary increase of BSWM in the past three years indicates no difficulty for the Center to secure the above mentioned budget in 1990.

(2) Maintenance

Nine staff members of the Technical Equipment Section of the Laboratory Services Division will be responsible for the maintenance of ordinary equipment. Consideration has been given in the facility and equipment planning stage to the achievement of economical maintenance. Those spare parts and other items which are difficult to procure in the Philippines have also been included in the respective plans so that maintenance work following the Project's completion can be easily conducted. In general, the equipment selection is based on easy repair and maintenance using resources available in the Philippines. At present, the BSWM conducts regular equipment maintenance. The equipment to be provided under the Project will correspond to the current technical level of the BSWM staff. As those staff members responsible for the maintenance of the new equipment will be able to master the required skills through short training courses, no problems in regard to future maintenance work are anticipated.

(3) Operation System

As the BSWM is actually conducting the expected activities of the Center, it is no exaggeration to say that the operation system for the Center already exists. The number of staff for the ISRIS and Training Departments, which are new organizations, to be introduced at the time of the BSWM's reorganization and expansion into the Center will be gradually increased based on the staff distribution plan. Based on the staff distribution plan, the recruitment of new employees will be made from the part timers in each department on the basis of merit and will be completed by the time of the Center's opening. As the necessary instructions, advice, etc. on the facilities and equipment can be directly provided to those responsible for their operation, no problems are anticipated in regard to the Center's operation after it has been handed over to the Philippine side.

CHAPTER 8. CONCLUSIONS AND RECOMMENDATIONS

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8-1 Conclusions

In 1986, the Government of the Philippines introduced the Medium-Term Economic Development Plan (1987 -- 1992) to restore the Philippine economy with the main objectives of the Plan being the eradication of poverty, the increase of employment opportunities and the achievement of appropriate economic growth, while adopting a basic policy of giving priority to agricultural development.

Consequently, the Government of the Philippines decided to establish the Soil Research and Development Center with the Department of Agriculture playing a central role. It was decided that the main objectives of the Center would be soil research and surveys, the development of farming techniques, the establishment of an information system and the training/ dissemination of farming techniques. The anticipated activities of the Center include the promotion of soil research and surveys, the development of techniques readily accessible to ordinary farmers and the training/dissemination of farming techniques in view of promoting such government policy measures as the fostering/settlement of small-scale farmers, agrarian reform and various agricultural development projects. In addition, the Center is expected to act as a national center for agrarian research which is capable of responding to diverse requests from other government institutions. The Project will, therefore, not only contribute to the improvement of agricultural productivity and profitability in terms of the fostering/settlement of small-scale farmers, improved income, increased employment opportunities, etc. but will also play a crucial role in the socio economic development of the Philippines.

As the effects of the Japanese cooperation for the construction of the Center are expected to be substantial, it can be concluded that the Project is suitable for the grant aid cooperation of the Government of Japan.

However, advanced capabilities in a wide range of technical fields will be required to establish the research and development implementation standards and system which will form the basis for the Center's future activities. The effects of the cooperation will, therefore, be further consolidated by the Government of Japan's provision of project-type technical cooperation which has been strongly requested by the Government of the Philippines.

8-2 Recommendations

In addition to the Government of Japan's grant aid cooperation and the project-type technical cooperation, of which formalization is currently under consideration, the following self-help efforts by the Philippine side will be required for the smooth implementation of the Project, the proper functioning of the Center following its completion and the generation of the maximum spread effect.

(1) Systematic Operation and Activities

- 1) Systematic operation will be required through the establishment of a clearly defined operation system to ensure the necessary budget appropriation from the Department of Agriculture, to secure the necessary personnel based on the staff distribution plan and to examine thoroughly the planned activities in view of the efficient utilization of the Center's facilities and equipment and for the consolidation of its activities.
- 2) As the Special Projects and Services, ISRIS and Training and Dissemination Departments will be newly introduced, it will be important to secure skilled personnel who have experience in relevant fields and/or engineers for these departments.

(2) Cooperation with Related Organizations

- 1) As the activities of the Center will be closely related to those of the UPLB, BPI, NIA, IRRI and PCARRD, information exchange between these organizations and the Center will be indispensable in view of the consolidation of the Center's activities.
- 2) The support of various organizations (for example, soil laboratories and experiment farms) of the Department of Agriculture will be essential to ensure the proper functioning of the Center. Accordingly, information exchange between these organizations and the Center will be necessary in addition to the improvement of their technical level through training courses and other activities.

(3) Maintenance

- 1) It is desirable that the full-time engineers responsible for the maintenance of the facilities and equipment be so assigned from the installation stage so that they can obtain a thorough knowledge of the

characteristics and functions of the equipment prior to the commencement of actual operation.

- 2) As the proper maintenance of facilities and equipment plays a crucial role in R & D activities, a sufficient maintenance budget should be allocated for the effective functioning of the Center.

(4) Work to be Undertaken by Philippine Side

- 1) All relevant procedures, including the official approval of tenders and construction agreements and development permission, etc. should be smoothly cleared for the Project's smooth implementation.
- 2) The removal of obstacles from the project site and the subsequent land preparation in accordance with the planned schedule will be crucial to maintain the project schedule.

(5) Budget

In view of the fact that the scope of the Center's activities is closely related to the budget scale, appropriate budgetary measures should be taken.

APPENDIX

1. Members of the Study Teams
2. Itinerary for the study
3. List of persons interviewed
4. Minutes of discussions
5. Condition of the proposed construction site
6. Others

1. Members of the Study Teams

1-1. The basic design study team

1-2. The draft final report confirmation team

1. Members of the Study Team

1-1. The basic design study team (April 7 to April 27, 1988)

Satoru Motomura	Team Leader	Director of Soil Research Division, Japan Soil Resources Development and Research Association
Shoichi Tokudome	Survey & Research Planner	Chief Researcher Environment Management Dept., National Institute of Agricultural Environmental Science
Naoto Yokota	Project Coordinator	Grant Aid Division Bureau of Economic Cooperation Ministry of Foreign Affairs
Takeshi Hamajima	Architectural Planner	Kume Architects-Engineers International Department
Akihiko Takeuchi	Architectural Designing	Kume Architects-Engineers Architectural Design Department
Katsuei Osao	Electrical Planner	Kume Architects-Engineers Electrical Design Department
Mikio Kurishiro	Mechanical Planner	Kume Architects-Engineers Mechanical Design Department
Masao Ishikawa	Equipment Planner	Kume Architects-Engineers Soil Scientist, Advisor
Tomihal Shimoji	Equipment Planner	Kume Architects-Engineers Specialist for Data Processing Equipment

1-2. The draft final report confirmation team (July 24 to July 30, 1988)

Satoru Motomura	Team Leader	Director of Soil Research Division, Japan Soil Resources Development and Research Association
Takeshi Hamajima	Architectural Planner	Kume Architects-Engineers International Department
Akihiko Takeuchi	Architectural Designing	Kume Architects-Engineers Architectural Design Department
Masao Ishikawa	Equipment Planner	Kume Architects-Engineers Soil Scientist, Advisor

2. Itinerary for the study

2-1. Itinerary of basic design study

2-2. Itinerary of draft report confirmation

2. Itinerary for the study

2-1. Itinerary of basic design study (April 7 - April 27, 1988)

No.	Month Date	Day	Activity
1	Apr. 7	Thurs.	Narita to Manila by JL 741 Meeting at JICA Philippine Office Courtesy Call on Embassy of Japan
2	Apr. 8	Fri.	Meeting with BSWM Observation of BSWM existing facility
3	Apr. 9	Sat.	Survey on Site Observation of similar facilities in Manila
4	Apr. 10	Sun.	Review of data Observation of similar facility in Manila
5	Apr. 11	Mon.	Meeting with BSWM Team meeting
6	Apr. 12	Tue.	Meeting with BSWM
7	Apr. 13	Wed.	Meeting with BSWM Survey on infrastructure at MWSS and DPWH
8	Apr. 14	Thurs.	Observation of satellite Laboratory in Bulacan city Meeting with BSWM, Team Meeting
9	Apr. 15	Fri.	Meeting with BSWM Survey on infrastructure at MERALCO and PLDT
10	Apr. 16	Sat.	Discussion on draft minutes
11	Apr. 17	Sun.	Review of data
12	Apr. 18	Mon.	Confirmation of minutes Courtesy Call on NEDA Signing of minutes at BSWM
13	Apr. 19	Tue.	Interim report to JICA Philippine office
14	Apr. 20	Wed.	Team leader Dr. Motomura, Mr. Yokota, Dr. Tokudome, Mr. Osao and Mr. Kurishiro left for Japan by NW 004 Observation of regional office and Lab. in Pampanga, and regional Lab. in Tarlac.
15	Apr. 21	Thurs.	Observation of UPLB and IRRI
16	Apr. 22	Fri.	Meeting with BSWM
17	Apr. 23	Sat.	Meeting on facilities and equipment with BSWM Observation of similar facility in Manila
18	Apr. 24	Sun.	Review of data
19	Apr. 25	Mon.	Observation of similar facility in Manila Meeting on facilities and equipment with BSWM
20	Apr. 26	Tue.	Survey report to JICA Philippine office Meeting on equipment with BSWM
21	Apr. 27	Wed.	Manila to Japan by NW 004

2-2. Itinerary of draft report confirmation (July 24 - July 30, 1988)

No.	Month Date	Day	Activity
1	July 24	Sun.	Narita to Manila by PR 431 Reception by Director BSWM
2	July 25	Mon.	Meeting at JICA Philippine Office Meeting with BSWM explanation on Draft Report
3	July 26	Tue.	Discussion on Draft Report with BSWM
4	July 27	Wed.	Discussion on Draft Report with BSWM Facility layout and Equipment arrangement Courtesy Call on Secretary, Department of Agriculture
5	July 28	Thurs.	Meeting with BSWM Observation of BSWM existing equipment
6	July 29	Fri.	Report to JICA Philippine Office Signing of minutes at BSWM Reception by the Team Leader
7	July 30	Sat.	Manila to Narita by UA 820

3. List of persons interviewed

3. List of Persons Interviewed

○ Concerned Persons on the Philippine Side

● Department of Agriculture (DA)

Carlos G. Dominguez	Secretary
Romeo L. Ledesma	Assistant Secretary
Brenda M. Katon	Assistant Chief Foreign Assisted Project Office, Project Packaging Division

● Bureau of Soils and Water Management (BSWM)

Godofredo N. Alcasid, Jr.	Director Executive Director, PMO
Reynaldo P. Bajar	Deputy Executive Director, PMO and Head of Cartographic Operations Division
Casimiro R. Mora	Director, Administrative Operations, PMO, Consultant, BSWM and Project Coordinator, Rain Stimulation Coordinating and Monitoring Operations
Rogelio N. Concepcion	Director, Technical Operations PMO and Head of Agricultural Land and Management Evaluation Division
Eduardo A. Brion	General Services Officer, PMO and Supply Officer III
Elsie A. Balagtas	Finance Officer, PMO and Manage- ment and Audit Analyst

Nestor M. Ticzon	Technical Services Officer, PMO and Supv. Soil Technologist
Lucio B. Casera	Architectural & Engineering Services Officer, PMO and Supv. Soil Technologist
Constancia R. Gantioqui	Laboratory Services Officer, PMO and Sr. Soil Technologist
Alejandro B. Micosá	Land Use and Remote Sensing Specialist, PMO and Supv. Soil Technologist
Nora B. Inciong	Soil and Water Resources Research and Training Specialist, PMO and Supv. Soil Technologist
Cesar Magadia	Soil and Water Conservation and Landscape Specialist, PMO and Supv. Soil Technologist
Crisencio Solano	Architect and Interior Design Specialist, PMO and Supv. Architect
Ferdnando Tuazon	Electrical Engineering Specialist, PMO and Electrical Engineer
Reynaldo Camacho	Telecommunication Specialist, PMO and Head of Maintenance Unit
Magdalena Q. Favis	Development Communication Specialist, PMO and Supv. Soil Technologist

Wilfredo E. Cabezón

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

● Members of the Project Consultants Group Project Management Offices,
BSWM

Gerry Gabuya

Managing Consultant

Angelito J.S. De Dios

Principal Consultant

Froilan L. Hong

Principal Consultant

Joel C. Valdes

Principal Consultant

Fred Feliciano

Consultant

Evangeline N. Lisbo

Consultant

Gabriel H. Abad

Consultant

Melchor C. Guerrerro

Consultant

Alfonso R.M. Sangil

Consultant

Josmar S. Lao

Consultant

● Regional/ Provincial Office & Laboratory, DA

Renato N. Bulay

Regional Director,
San Fernando Pampanga

Rufina V. Tayag

Supervising Soil Technologist
Regional Laboratory
San Fernando Pampanga

Lourdes Espinosa

Senior Soil Technologist
Bulacan Station, BSWM

● University of the Philippines - Los Baños (UP-LB)

Nicanor C. Fernandez	Chairman, Department of Soil Science Faculty of Agriculture
Santiago N. Tilo	Researcher
Tadao Hamazaki	Researcher
Pacifico C. Payawal	Research Program Coordinator for Solar Research and Development Project
Wilfredo E. Cabezón	Director of Computer Center

● International Rice Research Institute (IRRI)

Iwao Watanabe	Soil Microbiologist
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○ Concerned Persons on the Japanese Side

● Embassy of Japan in the Philippines

Naoki Hayashida	First Secretary
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● JICA Philippine Office

Moriya Miyamoto	Resident Representative
Katsuhiko Oshima	Deputy Resident Representative
Noriaki Niwa	Asst. Resident Representative

4. Minutes of discussions

4-1. Basic design study

(Signed on Apr. 18, 1988)

4-2. Basic design study draft report

(Signed on July 29, 1988)

4-1. Basic design study

(Signed on Apr. 18, 1988)

**MINUTES OF DISCUSSIONS
ON THE
BASIC DESIGN STUDY FOR THE
SOILS RESEARCH AND DEVELOPMENT CENTER PROJECT
IN THE
REPUBLIC OF THE PHILIPPINES**

**18 April 1988
Manila**



**Bureau of Soils
and Water Management
Department of Agriculture**



**Japan International
Cooperation Agency**

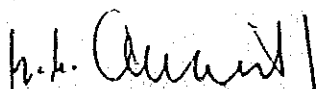
MINUTES OF DISCUSSIONS
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SOILS RESEARCH AND DEVELOPMENT CENTER PROJECT
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REPUBLIC OF THE PHILIPPINES

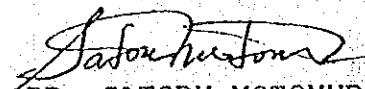
In response to the request of the Government of the Republic of the Philippines (GROP), the Government of Japan (GOJ) decided to conduct a basic design study of the Soils Research and Development Center Project (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent the Basic Design Study Team (hereinafter referred to as "the Team") headed by DR. SATORU MOTOMURA, former Deputy Director-General of the National Agricultural Research Center, the Ministry of Agriculture, Forestry, and Fisheries to the Philippines from the 7th to the 27th of April 1988.

The Team had a series of discussions on the Project with concerned officials and various offices of the GROP headed by Mr. GODOFREDO N. ALCASID, JR., Director of the Bureau of Soils and Water Management and Executive Director, Soils Research and Development Center, Department of Agriculture; observed the main office and laboratory facilities of the Bureau of Soils and Water Management; conducted field surveys at the site of the Project at Diliman, Quezon City and at various outreach stations of the Bureau; and reached mutual agreement with the Bureau of Soils and Water Management on the contents of the GROP request and on the utilization and function of the facilities and equipment of the Center.

As a result of the study, both Parties agreed to recommend to their respective Governments that the major points of understanding reached between them should be examined towards the realization of the Project.

April 18, 1988
Manila


GODOFREDO N. ALCASID, JR.
Director, Bureau of Soils
and Water Management (BSWM)/
Executive Director, Soils
Research and Development
Center (SRDC)
Department of Agriculture


DR. SATORU MOTOMURA
Leader, Basic Design
Study Team
Japan International
Cooperation Agency
(JICA)

ATTACHMENT

1.0 OBJECTIVE OF THE PROJECT

The Team confirmed the need of the GROF to establish the Soils Research and Development Center (hereinafter referred to as "the Center") as a national central organization on the development of soils technology in the Philippines. The Center shall provide and ensure the utilization of its technology and facilities by means of research, survey, training, technical services, experimentation, and extension. The effective and adaptive physical-based action programmes of the Center will strengthen and promote the agricultural development of the country and ensure the attainment of national goals and priorities.

The objective of the Project is to provide necessary buildings, facilities and equipment for the establishment of the Center in order to contribute to the improvement of agricultural productivity and profitability in the Philippines.

2.0 LOCATION OF THE PROJECT SITE

The Project site is located in Diliman, Quezon City and has been assigned by the Department of Agriculture to the Bureau of Soils and Water Management for the construction of the Center (Annex 1).

3.0 SCHEME OF PROJECT EXECUTION

3.1 The Bureau of Soils and Water Management is the overall executive and implementing agency for the Project. During the project implementation, a Project Management Office under the direction of a Project Steering Committee in the Office of the Secretary, Department of Agriculture shall supervise the construction of the Center.

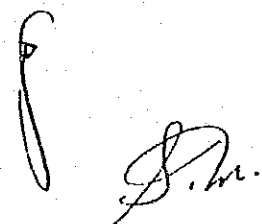
3.2 Upon completion of the Project, the Center will be an attached facility of the Department of Agriculture and its organization will be under the Office of the Secretary. The GROF will assign all the necessary staff as listed in Annex 2-A.

3.3 The GROF has arranged for the budget of the Center for its maintenance and operating costs as well as for the salaries of all its personnel and the implementation of its programs and activities (Annex 2-B).

4.0 CONTENT OF THE PROPOSED FACILITIES AND EQUIPMENT

The request of the GROF made on the Project for a Japanese Grant Aid Project Cooperation is as follows:

4.1 The construction of the Soils Research and Development Center including its laboratories, greenhouses, and training facilities as listed in Annex 3-A; and,



4.2 The supply, delivery, and installation of equipment, machinery, vehicles, a remote sensing device, including equipment, regional laboratories as listed in Annex 3-B.

The GROF has requested for a Rainfall Stimulation Equipment instead of a couple of computers for the Administration Department and the Team has expressed it will carefully examine the request based on technical feasibility and budgetary appropriation.

5.0 TRAINING PROGRAMMES UNDER THE CENTER

To ensure the optimum utilization of the facilities of the Center and to provide technical services to as broad a sector possible, the Center will implement training programmes as shown in Annex 4.

6.0 PHASING OF THE IMPLEMENTATION OF THE PROJECT

The implementation of the Project is based on the understanding of the design of the Center and of the Grant Aid budget appropriated in a fiscal year. The GROF has understood the phasing scheme of project implementation for the Center. The scope of implementation will cover two (2) phases and separate Exchanges of Notes between GROF and GOJ will govern each of the phases, as follows:

6.1 Phase One - Construction of the Main Building for soils research and development including laboratory facilities and the Supply, Delivery and Installation of its equipment and apparatus;

6.2 Phase Two - Construction of the Training and Information Building including other facilities and the Supply, Delivery, and Installation of its equipment and apparatus.

Each phase of the project implementation will be completed within one (1) fiscal year under the Grant Aid Project Cooperation system.

The GROF has informed the Team that it will exert effort to commence the preparation works at the Project site before the Exchange of Notes between GROF and GOJ for Phase One.

7.0 PROVISION AND MEASURES FOR EQUIPMENT OF THE REGIONAL LABORATORIES

The necessary equipment for the regional laboratories of the Center will be provided under the Grant Aid Project Cooperation.

7.1 The Center will be responsible for the administration and maintenance of the equipment to be installed in the regional laboratories.

7.2 The Center will provide proper training for the regional laboratory staff for the effective use of the equipment.

8.0 GRANT AID SYSTEM

The GROP has understood the Japanese Grant Aid system including the principle of engaging a Japanese consulting firm and Japanese contractor(s) for the implementation of the Project.

9.0 NECESSARY MEASURES TO BE TAKEN BY THE GROP

The GROP shall take the necessary measures as listed in Annex 5 and shall accomplish those measures on the condition that Grant Aid for the execution of the Project is extended by the GOJ.

10.0 TECHNICAL COOPERATION

The request of GROP is for an integrated Project-Type Japanese Technical Cooperation. The Team has agreed to convey the actual request for Technical Cooperation to the GOJ.

11.0 NECESSITY OF VEHICLES

The GROP has strongly requested for an increase in the number of field survey vehicles in order to strengthen the soil research and survey functions of the Center and its regional soils laboratories. The Team understood the nature of the request and has agreed to convey the request to the GOJ.

PLAN

OF LOT I-L, CF LOT I: Bsd 20544
AS PREPARED FOR
REPUBLIC OF THE PHILIPPINES
SITUATED IN THE

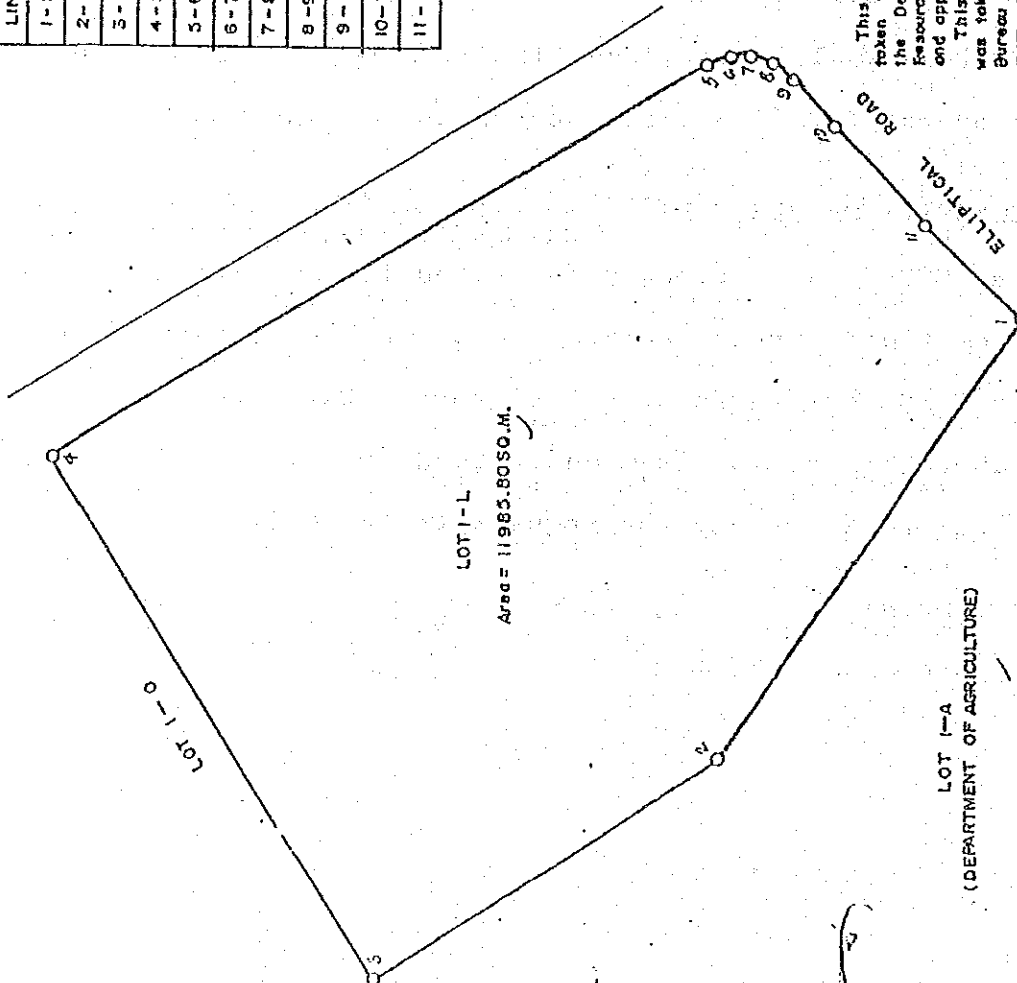
BARANGAY NO. _____ ZONE NO. _____
(BARRIO/ DIST. OF) DILIMAN
MUN./CITY OF: QUEZON CITY
PROVINCE OF: _____
ISLAND OF: LUZON
CONTAINING AN AREA OF 11965.80 SQ.M.

BEARING :
SCALE 1:500M.

(Sgd) ROSENDO C. ARCENA
GEODETIC ENGINEER

TECHNICAL DESCRIPTION

LINE	BEARING	DISTANCE
1-2	N55-00W	85.00M.
2-3	N32-29W	65.50M.
3-4	N57-02E	95.11M.
4-5	S32-23E	124.00M.
5-6	S21-32E	3.65M.
6-7	S0-50E	3.65M.
7-8	S20-10W	3.65M.
8-9	S41-12W	3.65M.
9-10	S51-43W	10.36M.
10-11	S46-57W	22.10M.
11-1	S42-11W	22.10M.



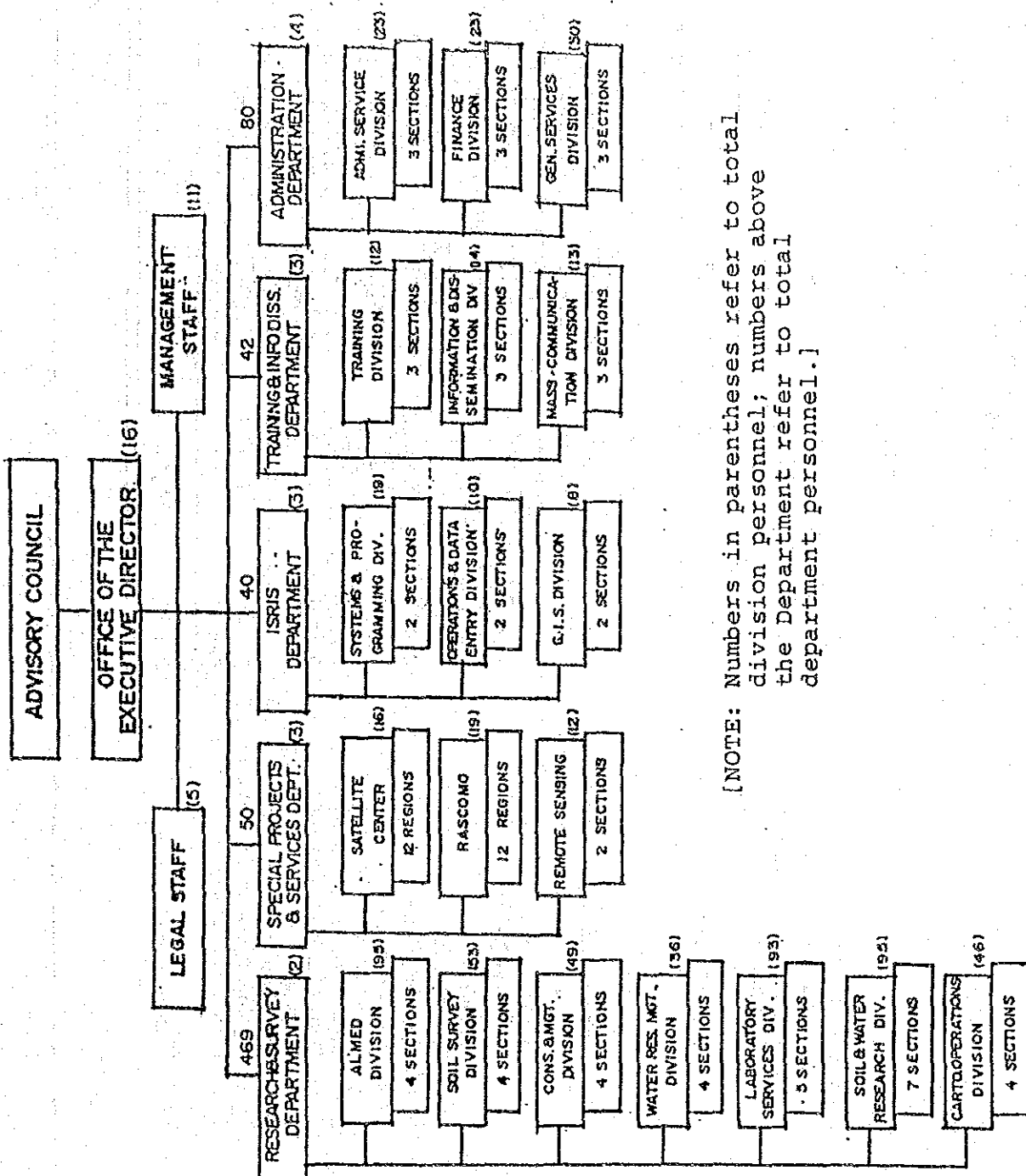
CERTIFICATION

This is to certify that this lot plan was taken from subdivision plan prepared for the Department of Agriculture and Natural Resources by the Bureau of Public Works and approved by Sec. Fernando Lopez.

This is to certify further that this plan was taken from the approved plan by the Bureau of Lands on May 16, 1968 from TCT 95391 dated August 5, 1965.

REYNALDO P. BAJAR

Chief, Cartographic Operations Division
Bureau of Soils and Water Management
Geodetic Engineer Reg.No.2005



[NOTE: Numbers in parentheses refer to total division personnel; numbers above the Department refer to total department personnel.]

ORGANIZATIONAL CHART OF THE CENTER

[Handwritten signature]

Operational Requirement of the
Soil Research and Development Center (SOILSEARCH)
Budgetary Program (1990-1994)

(In Thousand Pesos)

	1990	1991	1992	1993	1994
No. of Personnel					
Permanent Positions	474	474	474	474	474
Additional Positions (SOILSEARCH)	239	239	239	239	239

Total Personnel 713 713 713 713 713

1.0 Salaries

1.1 Permanent Positions	9,348	10,283	11,311	12,442	13,687
1.2 Other Personal Services	8,635	8,635	8,635	8,635	8,635

Sectional Total 17,983 18,918 19,946 21,077 22,322

2.0 Operations

2.1 Electricity	2,400	3,000	3,500	4,000	4,500
2.2 Water	853	1,000	1,200	1,400	1,600
2.3 Telephone & Postage	746	800	900	1,000	1,200
2.4 Gas & Fuel (Lab Gas)	35	50	80	100	120
2.5 Travelling Expenses	13,000	15,000	19,000	20,000	21,000
2.6 Transportation Services	600	700	800	900	1,000
2.7 Representation and Emergency Expenses	20	20	20	20	20
2.8 Other Services	19,215	22,539	23,688	24,866	26,316

Sectional Total 36,869 43,109 49,188 52,286 55,756

BSWA

BSW/M

(Cont'n)

3.0 Supplies							
3.1 Consumables	31,000	50,000	65,000	70,000	85,000		
3.2 Gasolins & Oil (including Servicing of Vehicles)	7,000	10,000	12,000	13,500	15,000		
Sectional Total	38,000	60,000	77,000	83,500	100,000		
4.0 Capital Outlay							
4.1 Land and land improvements outlay	4,450	10,000	10,000	10,000	10,000		
4.2 Equipment Outlay	20,000	13,000	13,000	13,000	13,000		
Sectional Total	24,450	23,000	23,000	23,000	23,000		
TOTAL	117,302	145,027	169,134	179,863	201,078		

LIST OF FACILITIES FOR THE CENTER

The Center consists of two structures namely the Main Building and the Training and Information Building. The facilities of each building are as follows:

1.0 MAIN BUILDING

1.1 Spaces for the technical divisions

- a. Soil Survey
- b. Soil Conservation and Management
- c. Agricultural Land Management and Evaluation
- d. Cartographic Operations
- e. Water Resources and Management

1.2 Spaces for Research and Laboratory Divisions

- a. Soil and Water Research
- b. Laboratory services

1.3 Spaces for electronic data processing

1.4 Spaces for Management and Operations

- a. Technical coordination and management offices
- b. Conference room
- c. Library

1.5 Other necessary spaces and functional rooms

2.0 TRAINING AND INFORMATION BUILDING

2.1 Spaces for training

- a. Lecture rooms
- b. Dormitories
- c. Printing and reproduction

2.2 Spaces for Information

- a. Soil museum
- b. Audio visual production room
- c. Convention room

2.3 Other necessary spaces and functional rooms

LIST OF EQUIPMENT FOR THE CENTER

The equipment for the Center are intended for the operations of the facilities as a national center of the Department of Agriculture for soils research and development and overall agricultural development of the Philippines, as follows:

- 1.0 Research and Survey Department
 - 1.1 Equipment for Agricultural Land Management and Evaluation
 - 1.2 Equipment for Soil Survey
 - 1.3 Equipment for Soil Conservation and Management
 - 1.4 Equipment for Water Resources and Management
 - 1.5 Equipment for Soil Laboratory Services
 - 1.6 Equipment for Soil and Water Research
 - 1.7 Equipment for Cartographic Operations
- 2.0 Special Projects and Services Department
 - 2.1 Equipment for Regional Soil Laboratories
 - 2.2 Equipment for Remote Sensing
- 3.0 Integrated Soil Resources Information System (ISRIS) Department
 - 3.1 Equipment for Geographic Information System (GIS)
 - 3.2 Equipment for System Operation and Maintenance
 - 3.3 Equipment for System Design and Analysis
- 4.0 Training and Information Department
 - 4.1 Equipment for Training
 - 4.2 Equipment for Information
 - 4.3 Equipment for Mass Communication and Production
- 5.0 Administration Department
 - 5.1 Equipment for Administration

LIST OF TRAINING PROGRAMMES UNDER THE CENTER

1.0 TRAINING FOR LEVEL I

- 1.1 Soil survey methods
- 1.2 Analytical methods for soil, plant tissue, irrigation water, and fertilizer
- 1.3 Methods for instrumentational operation
- 1.4 Soil cartography
- 1.5 Soil interpretation and land evaluation
- 1.6 Technology for soil management
- 1.7 Technology for water utilization and management
- 1.8 Technology for fertilization
- 1.9 Utilization of agro-biological resources
- 1.10 Technology for soil conservation
- 1.11 Environmental sciences
- 1.12 Integrated soil resources information system

2.0 TRAINING FOR LEVEL II

- 2.1 Practical soil tests
- 2.2 Soil diagnosis
- 2.3 Plant nutrition and diagnosis
- 2.4 Cropping system
- 2.5 Field experimentation management

3.0 TRAINING FOR LEVEL III

- 3.1 Interpretation and utilization of soil maps
- 3.2 Water management practices for increased crop production
- 3.3 Utilization of inorganic and organic matter for increased soil fertility
- 3.4 Utilization of soil micro-organisms

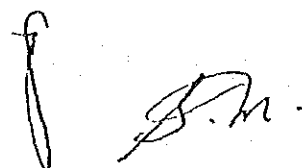
NOTE:

- Level I - Training for personnel of the Center
- Level II - Training for regional research coordinators and extension officers of the Department of Agriculture
- Level III - Training for farmer leaders, agri-businessmen, researchers and students

LIST OF MEASURES TO BE TAKEN BY THE GROF

The following are the necessary measures to be taken by the GROF in connection with the successful execution and operation of the Project:

- 1.0 To provide the necessary data and information for the basic design study;
- 2.0 To secure the lot of the land necessary for the Project and the construction of the Center;
- 3.0 To clear, level, and fill as needed, the site of the Center before the mobilization of the construction of the Project;
- 4.0 To provide the following facilities/utilities and appurtenant works in connection with the construction of the Center:
 - 4.1 Power distribution to the site;
 - 4.2 Water supply to the site;
 - 4.3 Main drainage to the site;
 - 4.4 Telephone trunkline to the main distribution frame/panel (NDF) of the building;
 - 4.5 Perimeter fencing and installation of gates in and around the site;
 - 4.6 Access roads to the site;
 - 4.7 Interior design and general furniture;
 - 4.8 Other incidental utilities, facilities, and services in connection with the above and the overall management and supervision activities in the construction and operation of the Center.
- 5.0 To assume commissions to the Japanese foreign exchange bank for banking services based on the banking arrangement as follows:
 - 5.1 Advising Commission of Authorization to Pay;
 - 5.2 Payment Commission.



- 6.0 To ensure prompt unloading, tax exemptions, customs clearances at ports of disembarkation in the Philippines and prompt internal transportation therein of the products and commodities purchased under the Grant Aid.
- 7.0 To accord Japanese nationals whose services may be required in connection with the supply of products and services under the verified contracts, such facilities as may be necessary for their entry into and stay in the Philippines for the performance of their work;
- 8.0 To exempt Japanese nationals from customs duties, internal taxes, and other fiscal levies which may be imposed in the Philippines with respect to the supply of products and services under the verified contracts.

[NOTE: It was confirmed that the treatment of the Value Added Tax (VAT) for locally purchased products and services for the Project should be discussed at an early stage by both Philippine and Japanese Governments.]

- 9.0 To maintain and use properly and effectively the facilities to be constructed and the equipment to be provided under the verified contracts and purchased under the Grant Aid.
- 10.0 To bear all the expenses, other than those to be borne by the Grant Aid, necessary for the construction of the facilities as well as for the transportation and installation of equipment.
- 11.0 To assign all the necessary staff for the proposed activities of the Center upon the execution and completion of the Project.

4-2. Basic design study draft report

(Signed on July 29, 1988)

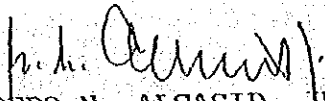
MINUTES OF DISCUSSIONS
ON THE DRAFT REPORT OF THE
BASIC DESIGN STUDY FOR THE
SOILS RESEARCH AND DEVELOPMENT CENTER PROJECT
IN THE
REPUBLIC OF THE PHILIPPINES

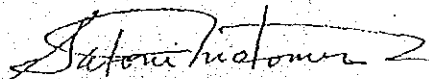
In response to the request of the Government of the Republic of the Philippines (GROP), the Government of Japan (GOJ) decided to conduct a basic design study of the Soils Research and Development Center Project (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent the Basic Design Study Team (hereinafter referred to as "the Team") headed by DR. SATORU MOTOMURA, former Deputy Director-General of the National Agricultural Research Center, the Ministry of Agriculture, Forestry, and Fisheries to the Philippines from the 7th to the 27th of April 1988.

As a result of the survey and discussions, JICA prepared a Draft Final Report on the Study and dispatched a Mission to explain and discuss the Report from July 24 to 30, 1988.

Both Parties had a series of discussions on the Report and have agreed to recommend to their respective Governments that the major points of understanding reached between them, attached herewith should be examined towards the realization of the Project.

July 29, 1988
Manila


GODOFREDO N. ALCASID, JR.
Director, Bureau of Soils and
Water Management (BSWM)
Executive Director, Soils
Research and Development
Center (SRDC)
Department of Agriculture


DR. SATORU MOTOMURA
Leader, Basic Design
Study Team
Japan International
Cooperation Agency (JICA)

MAJOR POINTS OF UNDERSTANDING

- 1.0 The Philippine Side has principally agreed with the basic design proposed in the Draft Final Report (with minor but appropriate modifications in lay-out, facilities, and equipment mutually agreed upon to be incorporated in the Final Report).
- 2.0 The Final Report on the Project will be submitted to the Philippine Side in ten (10) copies in English by the end of September 1988.
- 3.0 The Philippine Side understood the system of Japan's Grant Aid Program and confirmed to the arrangements to be taken by the Government of the Philippines for the realization of the Project.
- 4.0 The Philippine Side understood the Japanese side's explanation that the remote sensing equipment would be furnished in case the following two conditions are both satisfied:
 - 1) the technical cooperation for this field is implemented by the Japanese Government;
 - 2) the Philippine Side ensures provision of the budget necessary to operate and maintain the equipment.
- 5.0 The Philippine Side assures the Japanese Side to secure the full exemption of the Project from the Value Added Tax (VAT) law under Executive Order No. 273.
- 6.0 The Philippine Side expressed that the Philippine Government will release the necessary budget at the proper time in connection with the construction and operations of the Soils Research and Development Center.

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5. Condition of the proposed construction site

5-1. SRDC construction site

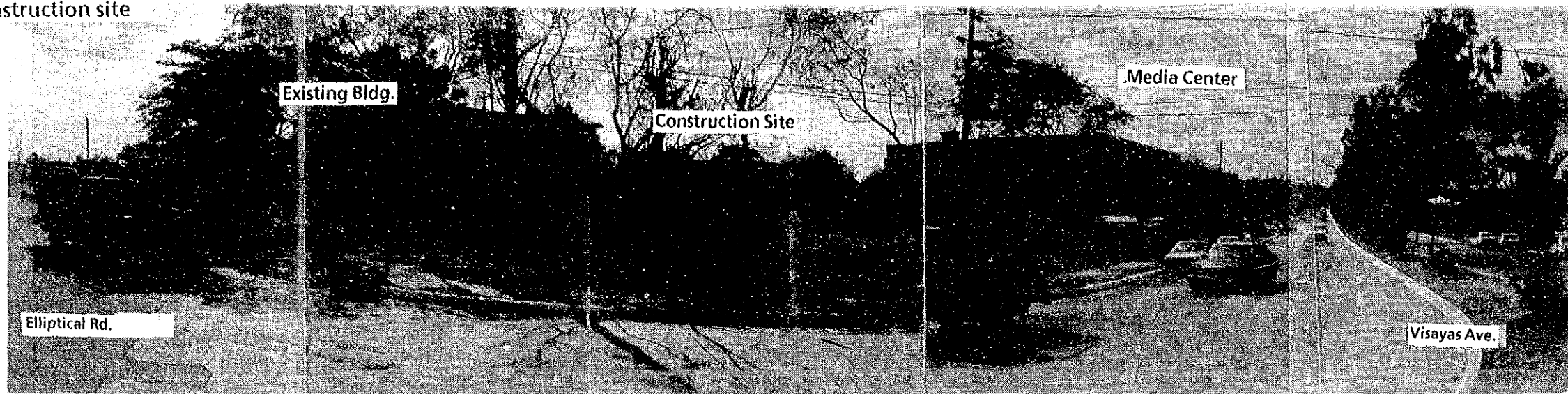
5-2. Deed of Assignment of Lot

5-3. Survey data

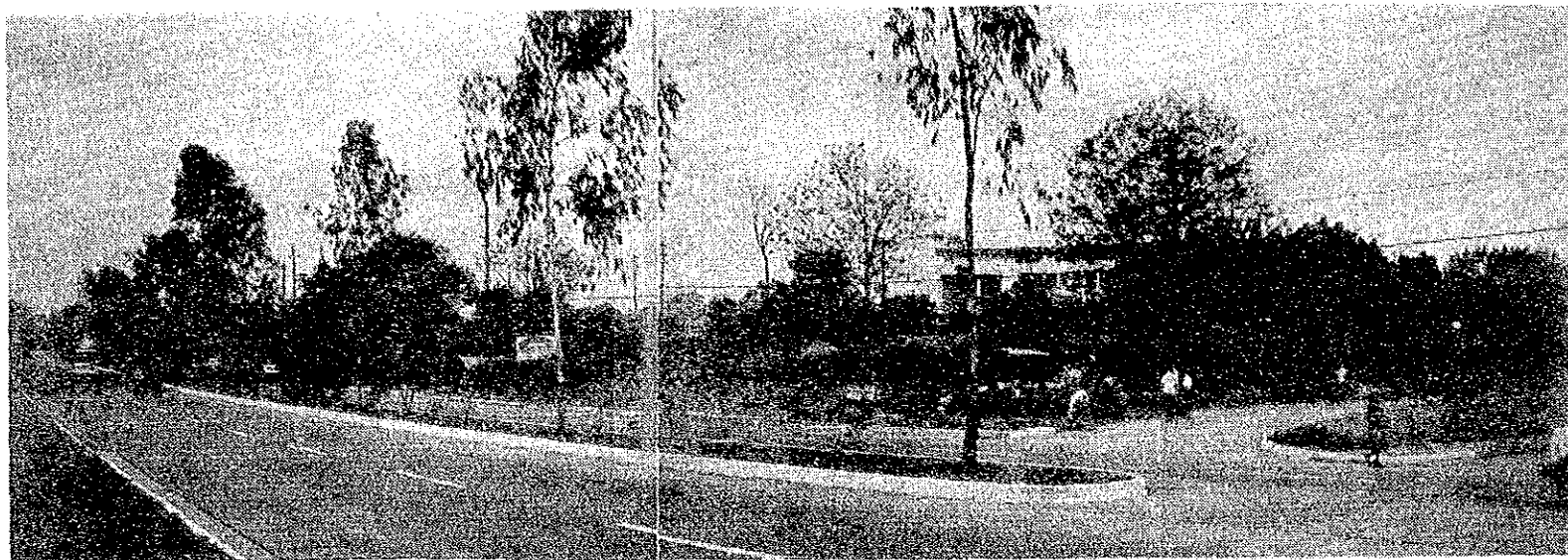
5-4. Boring data

5-5. Provision for Temporary Stock Yard

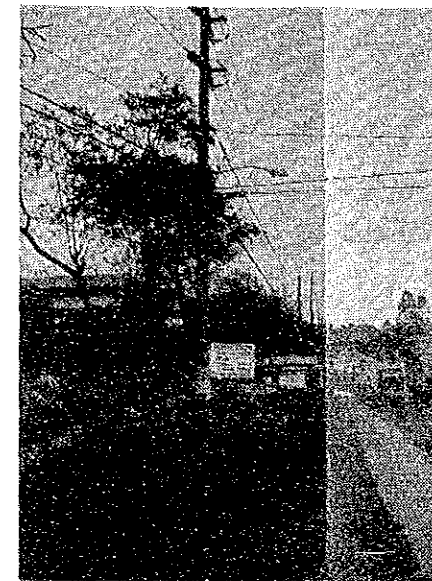
5-1. SRDC construction site



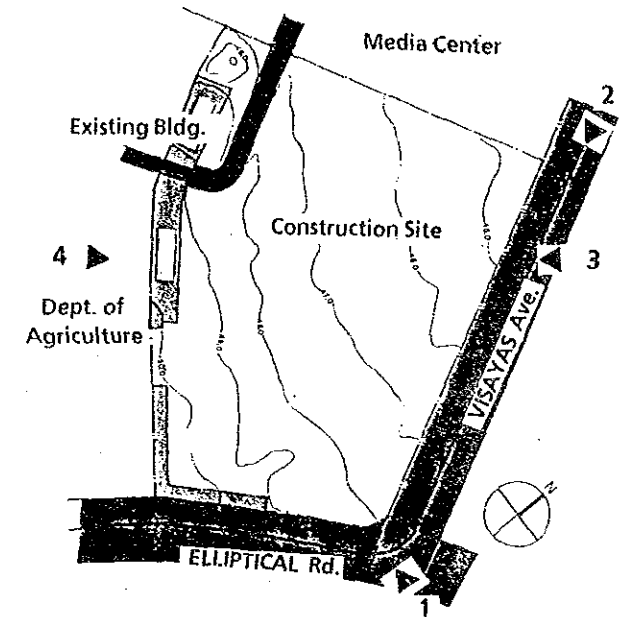
1. Construction Site from Elliptical Rd. & Visayas Ave. Corner



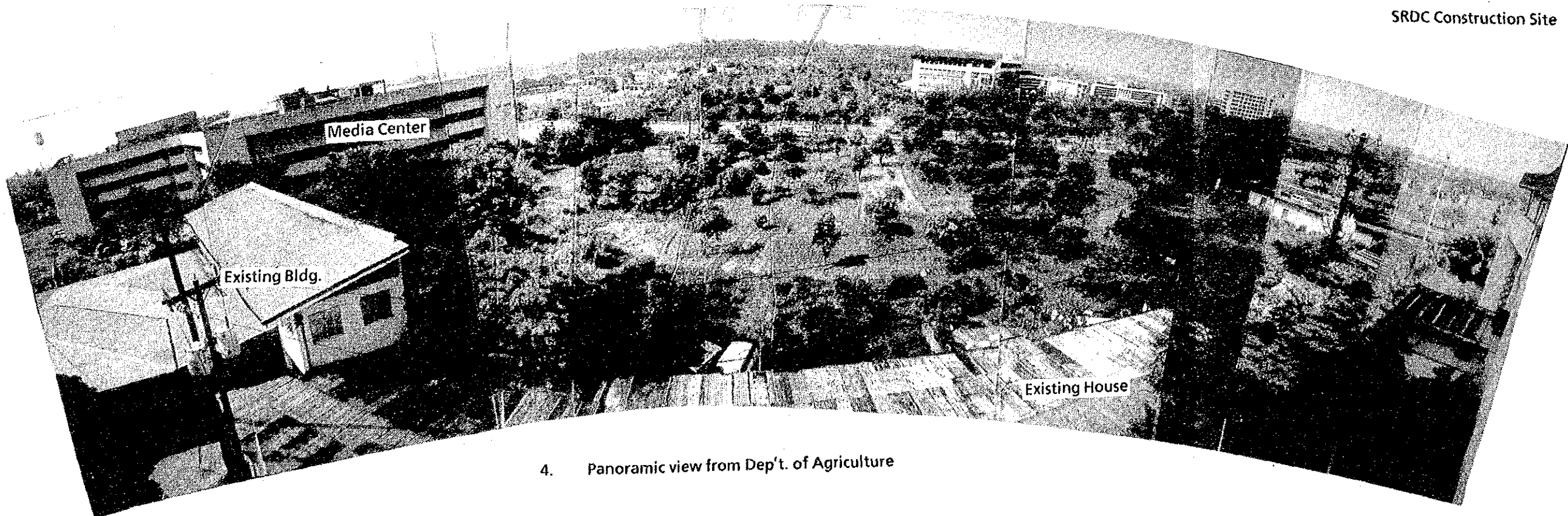
2. East side Rd. of Construction Site



3. MERALCO Power Line



SRDC Construction Site



4. Panoramic view from Dep't. of Agriculture

5-2. Deed of Assignment of Lot

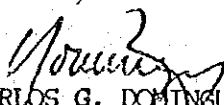
Republic of the Philippines
DEPARTMENT OF AGRICULTURE
Diliman, Quezon City

D E E D O F A S S I G N M E N T
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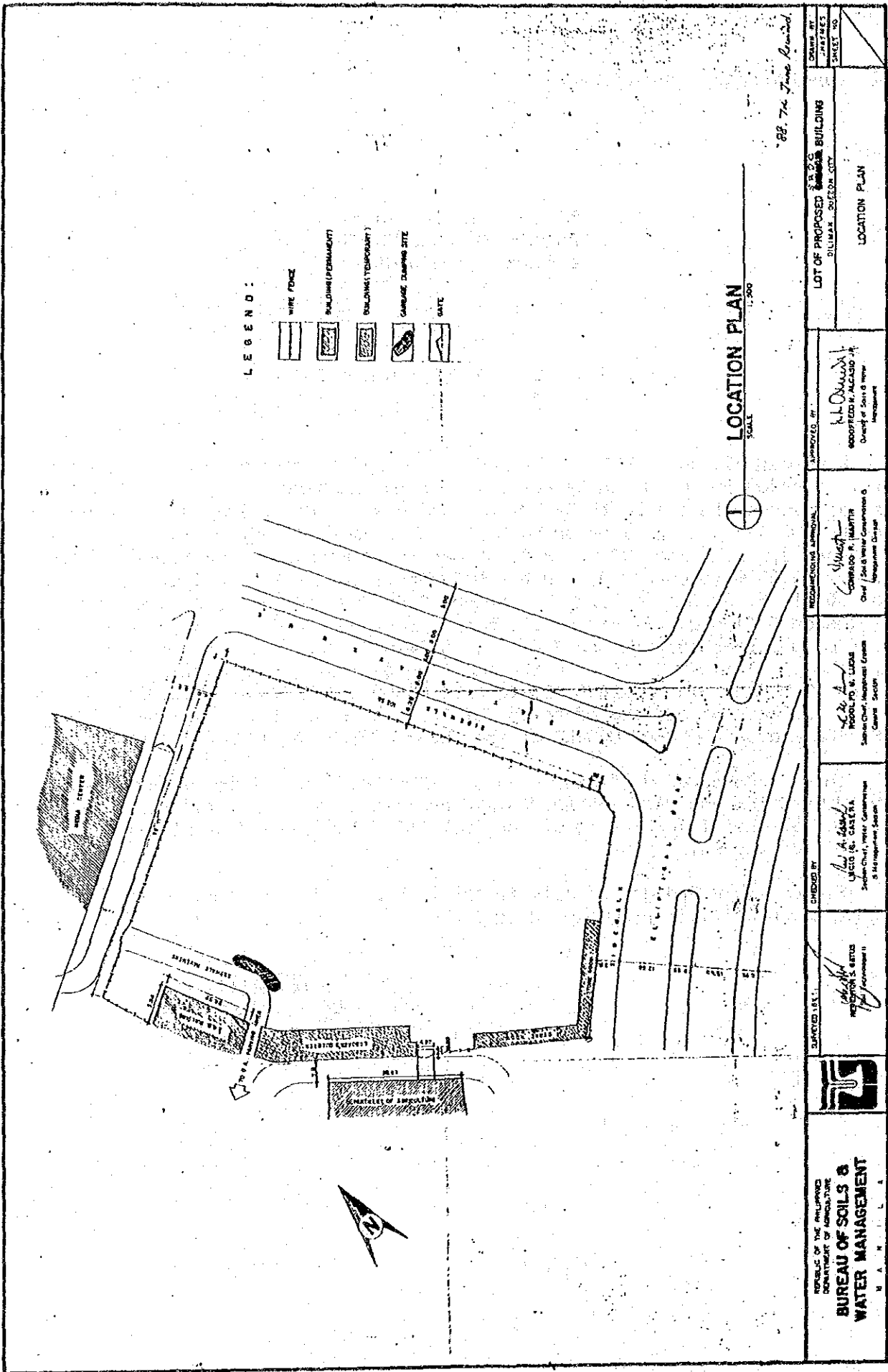
A parcel of land, LOT 1-L of LOT 1, Bsd-20544 located in Diliman, Quezon City, bounded in the North by LOT 1-0, in the East by LOT 3, Bsd. 20544 now Visayas Avenue, in the South by LOT B-4 and B-9 now Elliptical Road and on the West by LOT 1-A presently occupied by the Department of Agriculture, starting at Corner 1, N 55 deg. 00 min W 85.00 meters to corner 2; thence N 32 deg. 39 min N, 65.58 m to corner 3; thence N 57 deg. 10 min E, 95.11 m.; thence S 0 deg. 50 min E, 3.65 m to corner 7; thence S 20 deg. 10 min W, 3.65 m to corner 8; thence S 41 deg. 12 min W 3.56 m to corner 9; thence S 51 deg. 43 min W, 10.16 m to corner 10; thence S 46 deg. 57 min W, 22.10 m to corner 11; thence S 42 deg. 11 min W 22.10 m to the point of beginning, containing an area of ELEVEN THOUSAND NINE HUNDRED EIGHTY FIVE AND EIGHT TENTH (11,985.80) more or less, is hereby designated as the official site of the Philippines' SOIL RESEARCH and DEVELOPMENT CENTER of the DEPARTMENT OF AGRICULTURE.

This special deed of assignment, THEREFORE, is hereby entrusted to the BUREAU OF SOILS AND WATER MANAGEMENT to administer and cause effective use of the LOT as the official site of the SOILSEARCH for the maximum benefit of the Republic of the Philippines.

Signed this 3rd day of July in the year of our Lord Nineteen Hundred and Eighty Seven at Diliman, Quezon City.


CARLOS G. DOMINGUEZ
Secretary of Agriculture

5-3. Survey data



REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRICULTURE BUREAU OF SOILS & WATER MANAGEMENT M A N I L A		SURVEYED BY: <i>[Signature]</i> REYNOLDO S. ARTUS Surveyor II	CHECKED BY: <i>[Signature]</i> LUCIO S. CASTA Senior-Check, Water Conservation & Management Section	RECOMMENDED APPROVAL: <i>[Signature]</i> GERARDO R. MARTIN Chief / Soil & Water Conservation & Management Division	APPROVED BY: <i>[Signature]</i> RODRIGO R. ALCASID JR. Director of Soil & Water Conservation	LOT OF PROPOSED BUILDING DILIMAN, QUEZON CITY	DRAWN BY: JAMES E. S. SHEET NO.
	LOCATION PLAN						

5-4. Boring data

PROJECT CONSULTANTS GROUP (PCG)

PHILIPPINE OFFICIAL BOREHOLE LOG and SUMMARY OF TEST RESULTS for the SOILS RESEARCH AND DEVELOPMENT CENTER

Conducted by:

**DEAR DEVELOPMENT & BUILDERS CORP.
PROJECT CONSULTANTS GROUP**

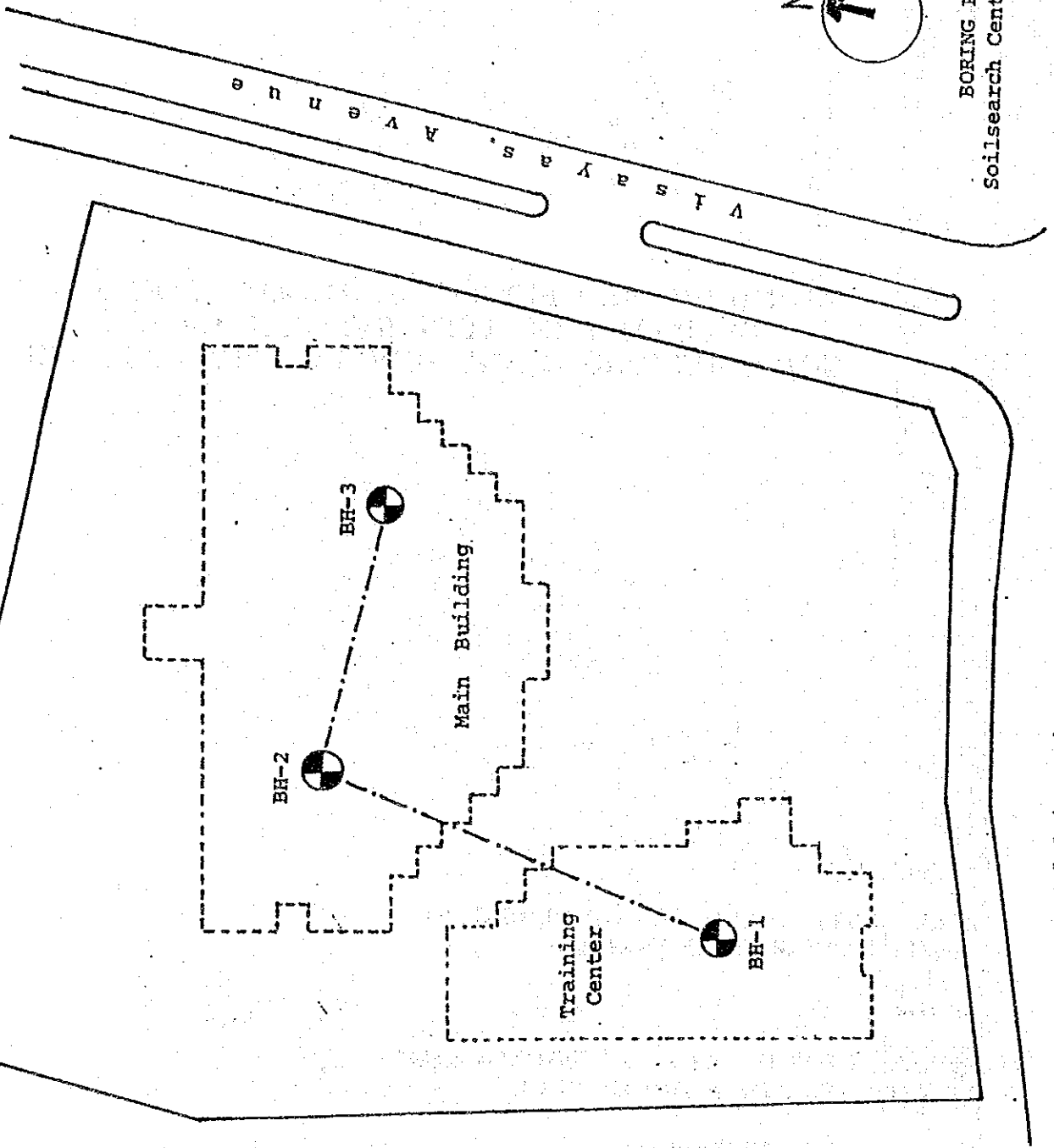
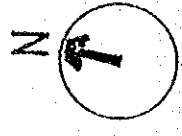
for the

**BUREAU OF SOILS AND WATER MANAGEMENT
DEPARTMENT OF AGRICULTURE**

Republic of the Philippines

P. B. Dionisio Bldg. Suite 317, 27 Don Alejandro Roces Ave., Quezon City, Philippines Tel. No. 98-51-06 to 08 loc. 23

BORING PLAN
Soilsearch Center Project



4-2.18

A-32



Dear development & builders corporation

BOREHOLE LOG & SUMMARY OF TEST RESULTS

PROJECT BUREAU OF SOILS & RESEARCH CENTER BUILDING JOB NO. SI 27-01 BOREHOLE NO. BH-1 (Page 1 of 2)
 LOCATION VISAYAS AVE. COR. Elliptical Road, C. C. DATE STARTED Sept. 15 '87 WATER TABLE 1.02 M.
 GROUND SURFACE ELEVATION 49.37 M. DATE COMPLETED Sept. 18 '87 TOTAL DEPTH 15.24 M.

Sample Number	X Sample Recovery	Elevation (M.)	DESCRIPTION	Symbol	Classification	H Value	NMC %	LL	PI	SIEVE ANALYSIS				Unit Weight (gm/cc)	REMARKS
										4	10	40	100		
SS-1 78			Dark brown silty clay	▲▲▲		14									CF-1.05 M.
CS-1 95		1.50		▲▲▲	CL	26	41	40	36	100	98	85			
CS-2 59		3.00	Dark brown adobe (Guadalupe Tuff)	▲▲▲		28									CS-3.00 M.
CS-3 61		4.50		▲▲▲											
CS-4 61		6.00	Yel-brown siltstone with some interbeds of sandstone	▲▲▲											CS-4.50 M. Start coring at 1.05 M. depth down to end of borehole using a core barrel.
CS-5 67		7.50	Dark brown adobe with some interbeds of sandstone and lenses of siltstone	▲▲▲											
CS-6 51		9.00		▲▲▲											CS-9.00 M.
				▲▲▲											

NOTE: Shallow water table caused by existing pockets of water in the area.

LEGEND: Cf - Change of Foundation, St - Sample Item, S1 - Sample size
 Cs - Change of Strata



Dear development & builders corporation

BOREHOLE LOG & SUMMARY OF TEST RESULTS

PROJECT BUREAU OF SOILS & RESEARCH CENTER BUILDING JOB NO. SI-87-01 BOREHOLE NO. BH-1 (Page 2 of 2)
 LOCATION VISAYAS AVE. COR. ELIPIDALOG ROAD, C. C. DATE STARTED _____ WATER TABLE _____
 GROUND SURFACE ELEVATION _____ DATE COMPLETED _____ TOTAL DEPTH _____

Sample Number	Sample Recovery	Depth (M)	DESCRIPTION	Symbol	Classification	N Value	RMC %	LL	PI	SIEVE ANALYSIS					Unit Weight gm/cc	REMARKS	
										4	10	40	100	200			
CS-7	50%	10.50	Interbeds of sandstone and brown adobe	0 4 0	C												
CS-8	51%	12.00		0 4 0	O												
CS-9	50%	13.50		0 4 0	R												
CS-10	52%	15.00	Interbeds of brown adobe, siltstone & sandstone	0 4 0	I											Cs-12.00 M Casing Used- 1.05 M.	
		15.24		0 4 0	N												
			END OF BOREHOLE	0 4 0	G												

LEGEND: CI - Change of Firmation; SI - Sample Interval; S - Sample Size; CS - Change of Strata

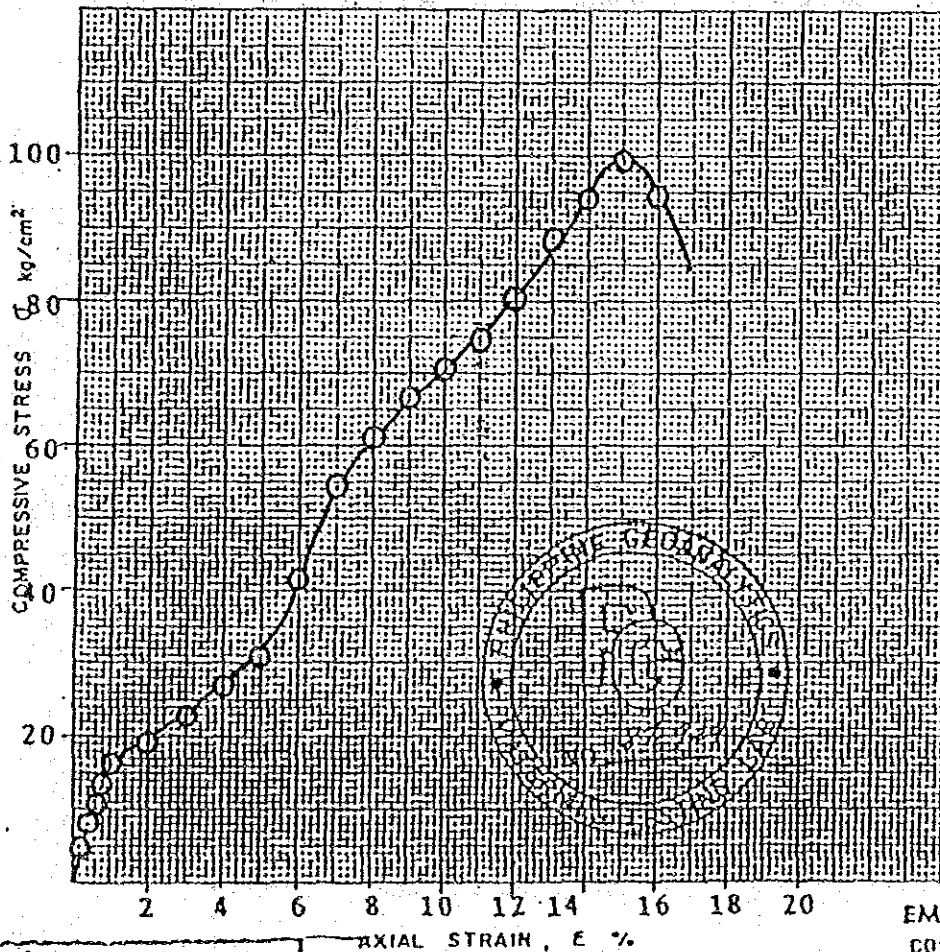
UNCONFINED COMPRESSION TEST REPORT

PROJECT: Proposed Bureau of Soil Bldg. DATE: 9-30-87
 BOREHOLE No: 1 DEPTH: 7'-8' TESTED BY: OT

SPECIMEN No	SPECIMEN CONDITION	DIMENSION OF SPECIMEN		MOISTURE CONTENT W (%)	WET DENSITY γ_t (g/cm ³)	UNCONFINED COMPRESSIVE STRENGTH q_u (kg/cm ²)	FAILURE STRAIN E (%)	SENSITIVITY RATIO S_r	
		HEIGHT H (cm)	DIAMETER ϕ (cm)						
1	CS	7.60	3.80	16.54	1.8252	99.47	15.0	-	

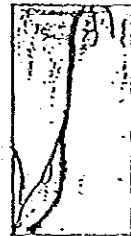
REMARKS:

Core Description: Siltstone; light gray

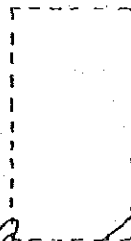


SPECIMEN AT ULTIMATE FAILURE

No. 1



No. _____



EMILIO A. MORALES MACE
 CONSULTING CIVIL ENGINEER
 REG. NO. 11236

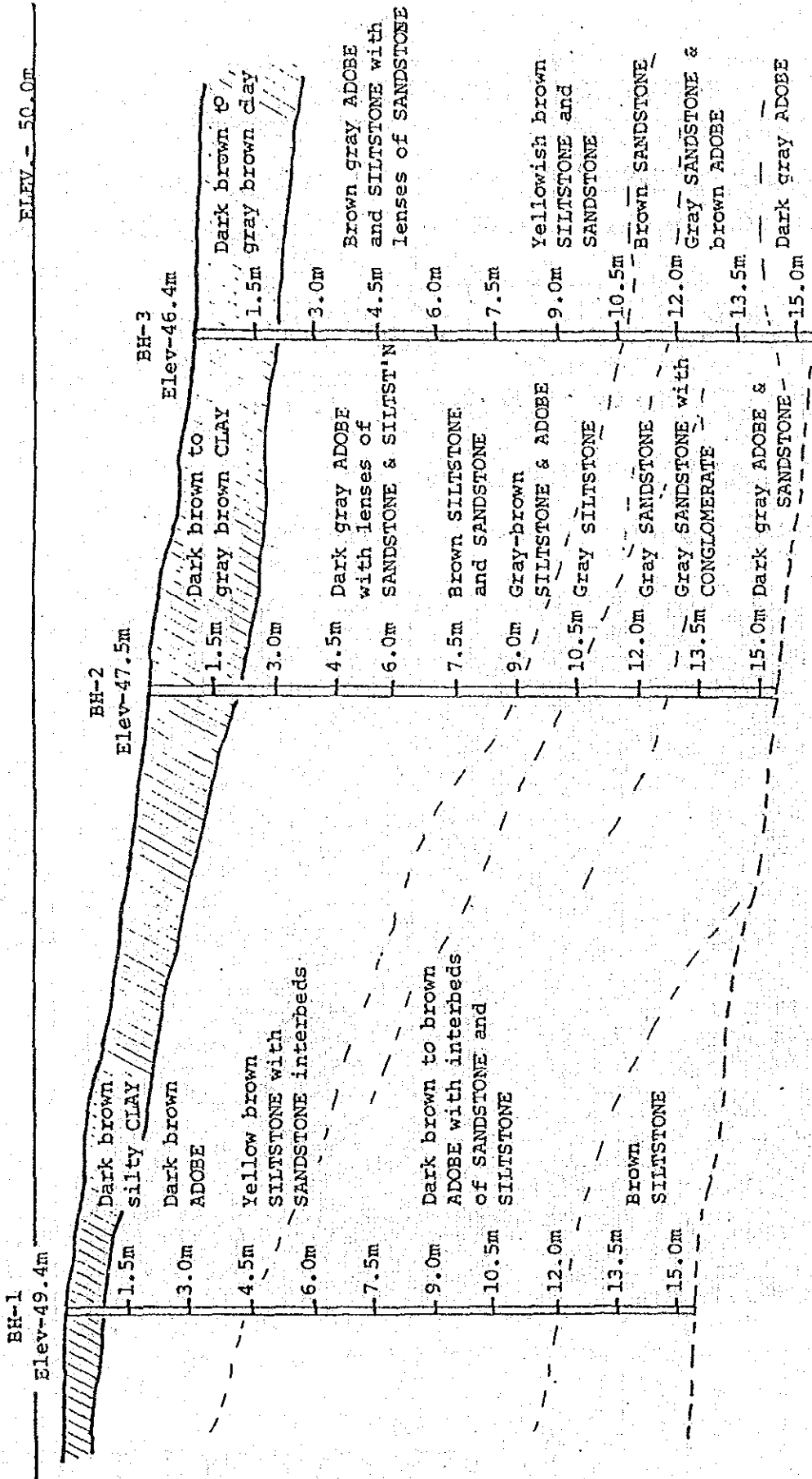
COMPUTER PRINT-OUT
 MANUAL COMPUTATION
 BY: [Signature]
 QUALITY ASSURANCE: [Signature]

DATE: 10-1-87

PHILIPPINE
GEOANALYTICS

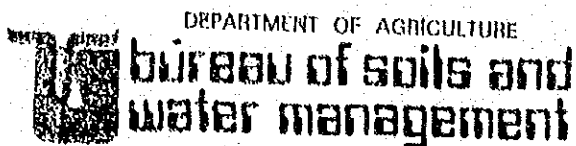
4-2.15

A-35



SOIL PROFILE along BH-1, BH-2 and BH-3

5-5. Provision for Temporary Stock Yard




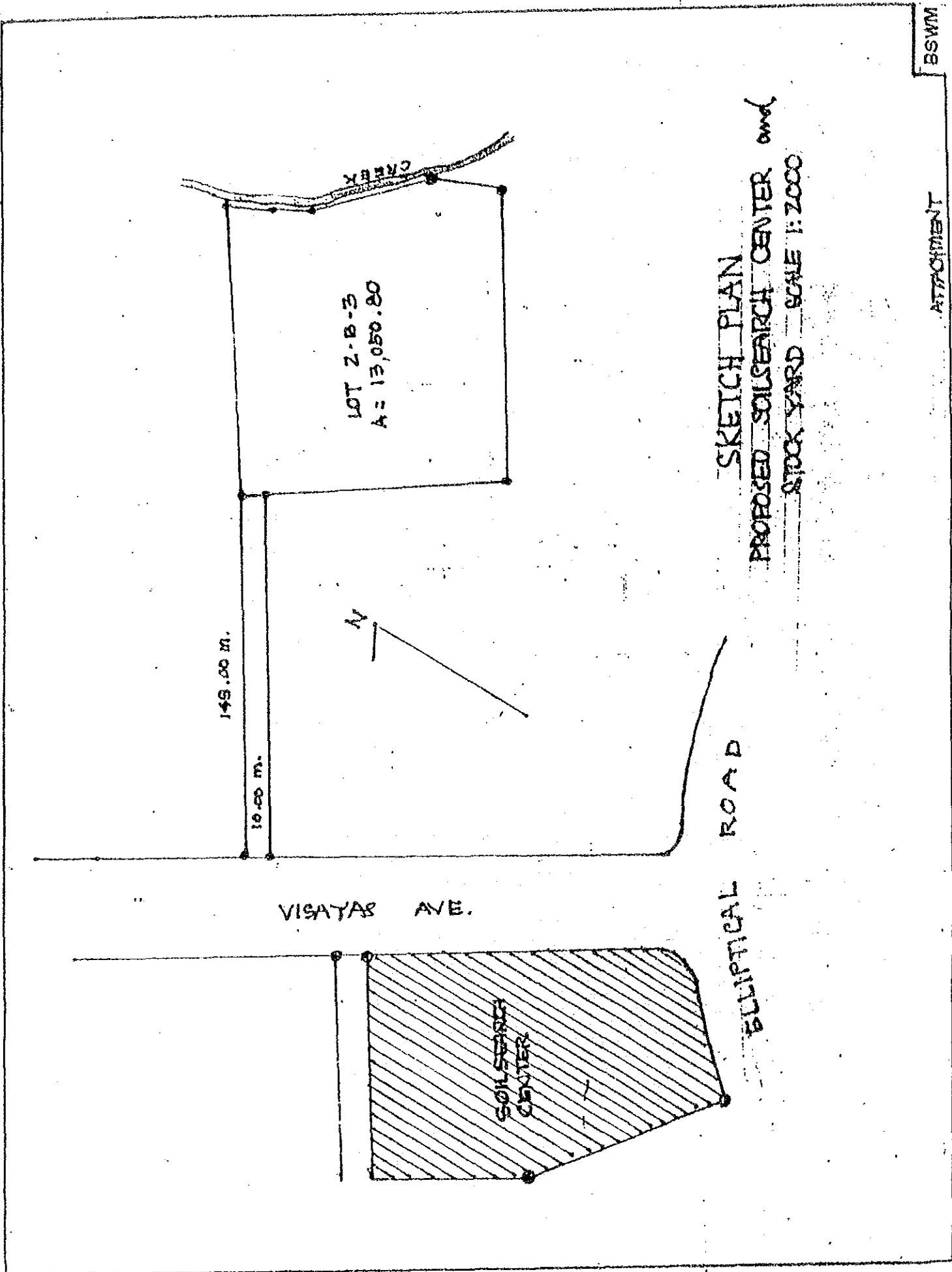
28 July 1988

ATTACHMENT

Lot 2-B-3, a portion of Lot 2-B, Bad-11829 as surveyed for the Department of Agriculture and Natural Resources approved 16 May 1968 containing an area of THIRTEEN THOUSAND AND FIFTY SQ.M. (13,050.00) more or less bounded by lot 2-B-1 assigned to Bureau of Animal Industry in the NW from corner 1-2; by a creek in the NE from corner 2-6; by lot 2-B-4 assigned to Agricultural Productivity Commission in the SE from corner 6-7; lot 2-B-2 assigned to the Bureau of Plant Industry from corner 7-B and Road lot 2-B-9 from corner 8-1. in the SE is hereby temporarily assigned to the Bureau of Soils and Water Management on 26 July 1988 and to be used as stockyard for the construction of the SOILS RESEARCH AND DEVELOPMENT CENTER.

Lot 2-B-3 shall be vacated and cleared, all temporarily structure to be torn down as soon as construction of the SOILS RESEARCH AND DEVELOPMENT CENTER is completed.


GODOFREDO N. ALCASID, JR.
Director of Soils
and
Water Management



SKETCH PLAN
 PROPOSED SOILSEARCH CENTER and
 STOCK YARD SCALE 1:2000

6. Others

6-1. List of BSWM existing equipment

6-2. Requested Communication Net Work

FACILITY/ EQUIPMENT INVENTORY CHART - BSWM

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. Flamephotometer	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	

6-1. List of BSWM existing equipment

FACILITY/EQUIPMENT INVENTORY CHART - BSWM

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, sertorius & pulp	6	- do -	serviceable	
	24. Mechanical Stirrer	1	- do -	unserviceable	
	25. Water Dimineralizer	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. Autoclave	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 - BSMW

CATEGORY	DESCRIPTION	QTY	LOCATION	STATUS DESCRIPTION	ACTION PLAN
	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 - 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 - 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-	
	Soil Auger, Screw Type	10	Survey Div.	-do-	
	Core sampler	15	Survey Div.	-do-	
	Core cylinders, brass	8	ALMED	-do-	
	Steel tapes, 3-meters	2	ALMED	Unserviceable	
	Steel tapes, 2-meters	582	ALMED	Unserviceable - 450	
	Planimeter, Polar	5	ALMED	-do-	
Compass, Liquid	3	ALMED	-do-		
Compass, Brunton	1	Survey	Serviceable		
Altimeter	3	Cartography	-do-		
Stereoscope, Mirror	Compass, Brunton	5	Soil Conservation	-do-	
	Altimeter	1	ALMED	-do-	
	Stereoscope, Mirror	1	Soil Conservation	Serviceable	
	Stereoscope, Mirror	2	ALMED	-do-	
	Stereoscope, Mirror	4	Survey	-do-	
	Stereoscope, Mirror	5	Soil Conservation	-do-	
	Stereoscope, Mirror	3	ALMED	-do-	
	Stereoscope, Mirror	1	Survey	-do-	
	Stereoscope, Mirror	4	ALMED	-do-	
	Stereoscope, Mirror	1	Survey	-do-	
Stereoscope, Pocket Thermometer, Soil Sieve, 0.075 mesh	Stereoscope, Pocket	1	Soil Conservation	-do-	
	Thermometer, Soil	2	Soil Survey	-do-	
	Soil Sieve, 0.075 mesh	2	ALMED	-do-	
	Soil Sieve, 0.075 mesh	10	ALMED	-do-	
	Soil Sieve, 0.075 mesh	10	ALMED	-do-	
	Soil Sieve, 0.075 mesh	10	ALMED	-do-	
	Soil Sieve, 0.075 mesh	10	ALMED	-do-	
	Soil Sieve, 0.075 mesh	10	ALMED	-do-	
	Soil Sieve, 0.075 mesh	10	ALMED	-do-	
	Soil Sieve, 0.075 mesh	10	ALMED	-do-	

FACILITY / EQUIPMENT INVENTORY CHART - BSWMI

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

FACILITY / EQUIPMENT INVENTORY CHART - BSWM

CATEGORY	DESCRIPTION	QTY.	LOCATION	STATUS DESCRIPTION	ACTION PLAN
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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-	-do-	
	Drafting Machine	1	-do-	Unserviceable	
	Curve, Flexible	10	-do-	Serviceable	
	Graver, Stabilene	2	-do-	-do-	
	Lettering Set	20	-do-	Unserviceable - 10	
	Lettering Set	1	Soil Survey	Partially Serviceable	
	Lettering Set	14	Soil Conservation		
	Magnifying Lens	10	Cartographic Div.	Serviceable	
	Pantograph	3	-do-	Unserviceable - 5	
		6	Soil Conservation	Unserviceable - 2	
	Printing Machine	3	-do-	Serviceable	
	Photo Copying Apparatus	2	-do-	Unserviceable - 1	
	Plan Variograph	2	-do-	Unserviceable	
	Photo Typesetter	2	-do-	Serviceable	
Printing Cabinet	1	-do-	Unserviceable - 1		
Offset Printer	1	-do-	Serviceable		
Paper Guillotine	1	-do-	Unserviceable		
			Serviceable		

FACILITY / EQUIPMENT INVENTORY CHART - BSWM

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

FACILITY / EQUIPMENT INVENTORY CHART - BSWM

CATEGORY	DESCRIPTION	QTY.	LOCATION	STATUS DESCRIPTION	ACTION PLAN
Audio-visual and photographic equipment	1. Camera, 135 mm	2	Soil Conservation	Unserviceable - 1	
	2. Cabinet, Film Drying	2	Cartography	Unserviceable - 1	
	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, table type with flexible neck	10	-do-	-do-	

FACILITY / EQUIPMENT INVENTORY CHART - BSNM

CATEGORY	DESCRIPTION	QTY.	LOCATION	STATUS DESCRIPTION	ACTION PLAN
Audio-visual and photo-graphic equipment (cont'd)	16. National Intercom, model VL204 A/205A wallmount type super selective system	24	Maintenance Sec.	Good Condition	
	17. Radio telephone SS8 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-		

FACILITY/EQUIPMENT INVENTORY CHART - BSWM

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 - USM

CATEGORY	DESCRIPTION	QTY	LOCATION	STATUS DESCRIPTION	ACTION PLAN
Building Maintenance	1. Electric Drill; sizes: 1/2 and 1/4	1	OSM Maintenance Section	Service able	
	2. Electric Grinder with condenser; 220 V CA; 50/60 cycles	1	-do-	-do-	
	3. Vice, Mechanical, Medium	1	-do-	-do-	
	4. Welding Kit; Oxygen and acetylene with complete accessories	1	-do-	-do-	

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