

# MEREC

MANAGING ENERGY AND RESOURCE EFFICIENT CITIES IN DEVELOPING COUNTRIES

## THE MEREC IMPACT ASSESSMENT HANDBOOK for the CITY OF TACLOBAN, THE PHILIPPINES

Prepared by

SOCIO-ECONOMIC SYSTEMS CORPORATION (SES)  
3201 New Mexico Avenue, NW, Suite 200  
Washington, D.C. 20016

Contract Number OTR 5402-C-00-2295-00

for

The U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT  
Office of Multisectoral Development  
Bureau of Science and Technology

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JUNE 15, 1983 WASHINGTON, D.C.

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# CHAPTER I

## CHAPTER I

### THE MEASUREMENT OF IMPACT IN A DEVELOPMENTAL PROJECT SETTING

#### A. Impact as a Necessary Consequence of Developmental Intervention

Developmental projects necessarily take place under conditions of change. The very existence of projects to improve roads and/or agriculture and/or health, and/or education, and/or utilization of energy, etc., etc., involves change in customary ways of doing things. Developmental projects are interventions that alter, sometimes in profound and unpredictable ways, a status quo that may have endured for centuries. Great dams, such as the Volta River in Ghana, and the Asswan Dam in Egypt, have not only impacted farming methods, they have also uprooted communities, changed ancient transportation routes, and produced and eliminated new breeding grounds for insects, plants, and animals. Although much of the impact of these great dams could not have been anticipated, some could have been predicted had the effort been made. And, perhaps, had an impact evaluation been made in advance of these great projects, negative impacts might have outweighed the positive, and one or both of these great dams might have been abandoned. An evaluation of project impact thus involves a requirement to attempt to predict short- and long-term consequences of a project, at the outset. This effort to predict the impact of a project prior to its initiation demands:

- Clarification and specification of project objectives.
- Establishing what could be expected to occur in the absence of the new project as compared with what could be expected with the new product.
- Minimizing ambiguity and uncertainty as to the impact of the project through use of objective and quantitative measurement methods wherever possible.

Measurement of project impact takes place in many dimensions. An agricultural project could have impacts in terms of food production, cost, credit, farmer skills, management, distribution methods, child mortality, literacy, or an infinite of possible other consequences of initiating a project or a program.

## **1. Designating the Primary Impact Indicator**

Obviously, developmental projects exist only because there is some condition or state of affairs in a developing country that seeks to improve conditions through the use of a donor agency, plus improved technical support. In selecting the Impact Indicator from the myriad possible project impact indicators, it is necessary to consider the pressing need that brought the project into existence, and to attempt to develop an indicator that measures whether the project over the course of its life served to lessen or intensify the situation, or, perhaps, showed no effect. For example, in a desert area a well-digging project might have been initiated to increase the water supply in order to increase the agricultural output of farms. In this case, since the primary objective was increased agricultural output, the Primary Impact Indicator might well be something like tons-per-hectare-per-year.

Similarly, if the goal of the project is to reduce water waste in an urban area, the Primary Impact Indicator might be to measure savings in kiloliters over some time-unit such as a month, quarter, or year. The essential consideration is to link the Primary Impact Indicator to the basic situation that impelled the developmental project into being.

Small cities, such as Tacloban, are extremely complex. The population (106,000) is packed into an area covering 108 square kilometers with a considerable portion of the land still arable in outlying areas. The residents are for the most part completely dependent on the city for major services such as water, electricity, sewage, roads, public housing, waste management, education, and many other services.

A project is a major intervention into a community analogous to but differing from natural events such as earthquakes, tornadoes, droughts, and floods. A project involves an effort to improve or change some existing condition for the better. Both projects and natural events possess impact in the sense that each has important economic and social consequences for those effected. The difference between project impact and the impact of natural disasters is that it is possible to establish when a project begins and to determine whether it had any effect on the situation it was established to ameliorate or correct.

The primary objective of the MEREC project is to improve the efficiency of energy and resource utilization through initiating a series of projects designed specifically to achieve this basic objective. These projects take place in the various city departments or sectors.

## **B. Brief Historical Summary of Impact Measurement**

### **1. Discussion**

The AID project evaluation process requires a regular systematic collection and analysis of objectively obtained data. This responsibility rests with the Agency action units, the host country Missions, which are mainly responsible with project development and implementation. The process therefore necessitates periodic project review and coordination including the utilization of evaluation findings and results to effectuate project action and project direction decisions.

The evaluation of the impact of developmental assistance projects, however, is of special importance in the AID project evaluation process primarily because it focuses "special attention on the actual effects of projects on specific target groups or individuals." The general objectives of impact assessment are presented in an Agency document by the Training and Development Division, entitled Design and Evaluation of AID Assisted Projects. Some of the major objectives follow:

Impact evaluation attempts to assess the consequences of development assistance, at the project, program, or policy level. At any of these levels, impact evaluations are expected to:

- (a) determine whether social and/or economic changes occurred; and
- (b) ascertain whether such changes are attributable to the specific development assistance policy, program, or project under examination.<sup>1</sup>

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<sup>1</sup>Design and Evaluation of AID-Assisted Projects, U.S. Agency for International Development, Training and Development Division, November 1980, p. 240.

The Foreign Assistance Act requires that AID developmental projects be designed to help improve the conditions of the poor in developing country contexts; impact evaluation therefore should focus upon project consequences with emphasis on the relationship between what occurred and what the project was supposed to achieve, "whether desirable or undesirable, transient or permanent, immediate or delayed, intermediate or final, planned or unplanned."<sup>2</sup>

It is also concerned with other causal factors (other programs, projects, policies, strategies, institutional and structural influences, market conditions, etc.) which may have been instrumental in stimulating the observed changes. Impact evaluation often deals with complex interactions where important consequences may be latent and obscure, rather than readily observable.

[Therefore] the approaches, methods and techniques used in impact evaluations are often complex. They must be sufficiently sensitive to detect change; they must be precise enough to yield information on the degree to which the changes that are observed are attributable to specific causes.

Impact evaluation is the Agency tool for addressing questions of particular importance with regard to the project hypotheses, strategies and process, on a selective basis. Impact evaluation will be applied in situations where:

- Understanding the consequences and causal relationships in a specific project is deemed important.
- Evaluating one or two projects that articulate a common set of development hypotheses may clarify understanding of a functional cluster of Agency projects (e.g., a specific type of agricultural production intervention).
- Evaluating several projects directed at the same socioeconomic consequence, but employing different approaches, could provide a measure of relative effectiveness of the approaches.
- Evaluating one or more projects offers the possibility that AID could increase its understanding of important process issues, such as participation strategies, etc.<sup>3</sup>

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<sup>2</sup>Ibid., p. 240.

<sup>3</sup>Ibid., p. 240.

## 2. Inputs, Outputs, and Impact Assessment

What can be controlled during a project are the many short-term events, such as the sector, facilities, crop, location, skills, funding level, time, etc. These are the controllable inputs or independent variables. However, what is characteristic about impacts is that impacts are outputs (whether short-term or long-term) and are therefore dependent variables that are beyond the direct control of those carrying out the project. Thus, impact assessment involves evaluating two basic types of outputs: short-term and long-term.

AID has succinctly summarized this relationship by stating that long-term impact effects are a consequence of short-term impacts. Thus, AID states:

As a guideline, immediate impact from projects should be observable some time in the period from one to eighteen months after a project's Outputs are delivered. Long-term impact will probably be observable within twelve or twenty-four months after Outputs are delivered. These preliminary expectations lack field verification. They do, however, suggest a way to define when an impact evaluation could capture information on both immediate and continuing project effects.<sup>4</sup>

## 3. Brief Review of AID Project Impact Evaluations

A review of several AID project impact evaluation reports indicates that projects' impacts were generally determined by the use of structured and non-structured interviews with project beneficiaries, engineers, technicians, and local officials. Such interviews were usually conducted during and after project completion. These interview reports were in most cases supplemented and supported by analysis of other available demographic and statistical data.

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<sup>4</sup>Ibid., p. 241

**a. Some Illustrative AID Impact Evaluations**

The impact evaluation of a rural penetration roads project in Sierra Leone (AID Project Impact Evaluation Report No. 7, June 1980) indicates the use of existing traffic and socioeconomic surveys carried out by third parties as the basis for project impact assessment, supplemented with field observation and interviews with key informants.<sup>5</sup>

In the evaluation of a Korean irrigation project (AID Project Impact Evaluation Report No. 12, December 1980) where the impact of sixty-six irrigation sites were assessed, the methods used, during and after project completion, were site visits, social and economic surveys, and other relevant statistical data.<sup>6</sup>

The impact evaluation of a potable water project in rural Thailand (AID Project Impact Evaluation Report No. 3, May 1980) was based on field visits and "standardized" interviews "administered at each of the randomly sampled sites, with the respondents including the water system operator, the village chief, village leaders, and other villagers."<sup>7</sup>

The Impact Evaluation Report (AID Impact Evaluation Report No. 18, March 1981) on a rural roads project in the Philippines indicates that the evaluation was based on interviews with beneficiaries ("barrio captains, farmers, fishermen, transport operators, business proprietors, and officials of other government agencies") and the use of a "number of forms and questionnaires, prepared in Washington and revised after discussions with all team members in Manila" and then pretested in the host country locales.<sup>8</sup> Actual transport and maintenance costs were determined through a detailed examination of maintenance records for before and after road construction.<sup>9</sup>

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<sup>5</sup>Effectiveness and Impact of the CARE/Sierra Leone Rural Penetration Roads Project. AID Project Impact Evaluation Report No. 7, June 1980, p. B-40.

<sup>6</sup>Korean Irrigation, AID Project Impact Evaluation Report No. 12, December 1980, pp. A-1 through A-4.

<sup>7</sup>The Potable Water Project in Rural Thailand, AID Project Impact Evaluation Report No. 3, May 1980, p. C-1.

<sup>8</sup>Philippines: Rural Roads I and II, AID Project Impact Evaluation Report No. 18, March 1981, p. A-4.

<sup>9</sup>Ibid., p. A-6.

The study concludes that "impact evaluations of the type we conducted must rely primarily on qualitative measures of change based on informed judgment."<sup>10</sup>

The impact evaluation of a Korean potable water system project (AID Project Impact Evaluation Report No. 20, May 1981) indicates that the impact evaluation was done on the basis of the following procedures and methods:

1. Team visits to each of the six AID-funded water systems.
2. Interviews of "county officials, officials of the communities where the systems were installed, system operators and users, and village committee members."<sup>11</sup>
3. Use of a "standardized interview schedule adapted from previous AID potable water evaluations" that were supplemented with extensive open-ended questioning "of each of the groups interviewed."<sup>12</sup>
4. Use of household surveys "designed to gather data on who used the system, and the knowledge, attitudes and practices of users and their perception of the impact of the system and of the CARE education component."<sup>13</sup>

The MEREC impact evaluation methodology is not primarily concerned with the use of interviews as the main instrument for obtaining information and data of project impact; MEREC methodology is concerned with locating the best objective data available to determine whether changes did occur in certain selected project measurement indicators and the degree to which the project attained its original goals and objectives. An important consideration in MEREC impact assessment is to determine the degree to which baseline measures change as a consequence of some type of project intervention. MEREC impact assessment not only requires baseline measures based on hard evidence, but also a projection of anticipated results prior to actual project initiation.

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<sup>10</sup>Ibid., p. A-7

<sup>11</sup>Korean Potable Water System Project: Lessons from Experience, AID Project Impact Evaluation Report No. 20, May 1981, Appendix A.

<sup>12</sup>Ibid., Appendix A.

<sup>13</sup>Ibid., Appendix A.

During the project, actual indicator values are then obtained monthly. These "Actuals" are then compared with "Projecteds" to determine the degree (in percent) to which project objectives are achieved as the project progresses. Upon project completion a final Impact Value (IV) is obtained by the formula:

$$IV = \frac{A_{IV}}{P_{IV}} =$$

Where  $A_{IV}$  = Actual Indicator Value, and

$P_{IV}$  = Projected Indicator Value

## C. Measurement in the Evaluation and Impact Evaluation Process

### 1. Basic Elements

The essential basis for impact measurement is to limit the importance of error in distorting whether a particular developmental project exceeded or did not exceed the objectives and/or goals of the project itself. In this regard, the type of measurement utilized to assess project impact should provide:

- a) **Objectivity:** Impact measurement should provide a method for reducing the importance of authority, criticism, self-aggrandizement, self-fulfilling prophecies, or any other type of subjective and personal factors by focusing upon:
  - (1) Whether or not changes occur;
  - (2) If changes do occur, the direction of the change;
  - (3) How much change took place; and
  - (4) Whether the change is properly attributable to the policy, program, or the project itself, or, to other external factors.
- b) **Comparability:** Any method of impact measurement can only justify the expense and effort in its development if it assists the Agency in deciding whether the approach or method is better or worse than others and by providing insights into how a project might be improved over time. Thus, the method of assessing impact should be designed so

as to permit comparisons with programs and projects with similar objectives and/or evaluate levels of impact within a single project. This is consistent with the Agency's position that the "approaches, methods and techniques used in impact methods and techniques used in impact evaluations ... must be adequate to detect change. In addition, they must be precise enough to yield information on the degree to which the changes are attributable to specific causes."<sup>14</sup>

- c) **Standardization:** Standardization is necessary to permit comparisons to be made between successive stages of a project or between projects. As projects usually involve different events in different developing country cultural and societal contexts, it is usually necessary to provide some means of transformation so that comparison between projects may be possible. This can be done by percentages, percentiles, and various types of distributions. Not to provide some standard, however, produces fragmented findings where project impact measures cannot be either compared or related to each other.

Essentially, a project is an intervention into a cultural and physical environment which possesses many consequences that cannot be fully or accurately predicted at the outset. Metaphorically, the measurement of impact is much like the measurement of the effect of a stone that is thrown upon the water. Where the stone strikes, there is a splash, i.e., the short-term impact; this is followed by ripples that take place later and cover much more territory, i.e., long-term impact. Thus, impact exists in two stages, immediate and second-generation effects. Every project possesses an immediate impact by its mere occurrence. The very process of emplacement, the new personnel, facilities, equipment, coordination, activities, and funds emanating from the project produce immediate consequences that occur as a result of activities during project operation. Once the project has become operational and institutionalized, impact shifts from short-term to long-term effects. This takes place as the project coordinates efforts with other governmental, private, scientific, educational, etc., organizations. During this long-range phase the initial energies may dissipate, oscillate, or increase substantially over time.

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<sup>14</sup>Ibid., p. 240.

## **2 Time Considerations**

The primary consideration in evaluating impact is to determine "impact on what?" It is necessary to locate and define exactly what the project is expected to change or improve. This usually establishes a requirement to go beyond intentions and desire in a search for quantifiable evidence that is germane to the basic objectives that impelled the project into existence and ultimately resulted in its funding, personnel, and facilities. For example, if the project was established to improve the supply of water to farmers, then it would be necessary to define:

- a) How much water is needed by farmers at specific points in time (specifying the project objective);
- b) How much water has usually been available for farmers at these times (specifying the baseline).

In establishing the objectives, in this case, it may be necessary to take into account such factors as soil, type of crop, planting and harvesting seasons, credit, mechanization, marketing, transportation, etc. The objective should then be stated in a form that can be made into a measure or indicator. For example, if a project had been concerned with use of irrigation to increase the amount of water by 50 percent on a typical farm, the indicator might be millimeters of water per hectare per month. In this case, the objective would also be necessary to consider the differences in water need by month, because irrigation requirements would fluctuate by month and season.

## **3. Indicator Selection**

Indicator selection must be specific to the project objective and take into account:

- The existence of whatever relevant objective data are available to be used as a baseline.
- An objective method of measurement must be provided so that the indicator can be expressed numerically.
- The indicator must be consistent with what is being measured; i.e., water must be expressed in gallons or liters; three dimensional space should be expressed in cubic feet or meters, etc., etc.
- Indicators should also define some time period such as a week, month, quarter, or year.

Thus, in the present analysis an indicator measure could be expressed as:

- Pesos per cubic meter per year;
- Pesos per kilowatts per year;
- Pesos per tone per month.

In summary, an indicator should:

- Provide a means of measurement that is specific and relevant for determining the achievement or non-achievement of project objectives.
- Provide a means of determining the degree to which the project is meeting its interim objectives (milestones) over the project years.
- Provide a means of producing feedback to project managers during and following the project initiation.

# CHAPTER II

## CHAPTER II

### MEASURING THE IMPACT OF MEREC IN TACLOBAN CITY

#### A. MEREC Strategy: Introduction

Recent predictions of the exhaustion of various natural resources and the high costs of energy have prompted the initiation of a far-reaching project by the U.S. Agency for International Development (USAID) in the utilization of resources and conservation of energy. This project, MEREC (Managing Energy and Resource Efficient Cities in Developing Countries) has as its objective, to initiate and evaluate the consequences of a strategy directed to reducing and/or increasing the efficiency of energy consumption in cities between 100,000 and 500,000 in population. In developing countries, as well in recent years, a great deal of attention has been given "to decentralizing urbanization by stimulating growth in smaller cities."<sup>15</sup>

The response of USAID has been to initiate a basic strategy for improving the use of resources and energy consumption in small and intermediate size cities in developing countries. This urban strategy is being initiated in the City of Tacloban, capital of Leyte Province, the Philippines. The multi-faceted methods for conserving and using energy and other scarce resources were initially presented in a paper prepared by Dr. Eric Chetwynd, Jr., of USAID, entitled "Managing Energy and Resource Efficient Cities (MEREC) in Developing Countries," in February 1982. MEREC is "designed to help improve efficiency in the consumption and use of energy and other key resources in rapidly growing small and intermediate-sized cities."<sup>16</sup>

The basic purpose of the MEREC strategy is to stimulate improved efficiencies in energy and resource consumption and utilization on a world-wide basis. In Tacloban City the MEREC strategy is designed to develop and implement in each of the designated sectors (land use, transportation, waste management, water and sewer, housing

<sup>15</sup>Chetwynd, Jr., Eric, "Managing Energy and Resource Efficient Cities in Developing Countries -- The Case of Small and Intermediate-Sized Cities: Reflections on Strategy Development in Tacloban, The Philippines," Paper presented at Expert Group Meeting on The Role of Small and Intermediate-Sized Cities in National Development, Nagoya, Japan, January 26 - February 1, 1982, p. 5.

<sup>16</sup>Ibid., p. 2.

construction, electricity, and public education and training) an energy and resource efficient action-plan designed to bring about resource utilization and increased resource efficiency.

The basic thrust of the MEREC project is to develop and implement a resource-efficient or resource-conserving strategy in each of the small and intermediate-size cities where it will be focused. This will require the implementation and maintenance of such a long-range commitment by city leadership and the planning and implementing organizations in making "resource conservation and efficiency a fundamental element of future development."<sup>17</sup>

The sectoral approach adopted for the pre-test of MEREC in Tacloban City is focused on the selection of various key "urban sectors likely to be energy and resource intensive or wasteful."<sup>18</sup> The sectors selected are land use, transportation, water and sewer, waste management, building design and materials (construction of housing), education and training, and electricity.

## **B. MEREC Strategy: Summary Descriptions of Sectors and Sub-Projects**

### **1. Introduction**

Tacloban, in common with every other urban community, exists as a device to provide services to its residents; such services are necessitated by the fact that urban residents cannot produce their own food, water, electricity, shelter, transport, and clothing, etc., to the extent possible in rural areas. As in other communities, through the use of taxation, a broad band of services is provided.

Tacloban's services differ to some degree from other urban communities based on the differences in location, technical development, equipment, skills available, size, resources, and raw materials that can be used to process, produce, and market.

In Tacloban City these areas of service are designated Sectors. The MEREC Project, working in close interaction with Tacloban community members, has developed a series of intervention efforts (sub-projects). These have been designed so that in the individual sectors and for the city as a whole there will be increased efficiency in the

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<sup>17</sup> Ibid., p. 5.

<sup>18</sup> Ibid., p. 9

utilization of energy and other community resources. The impact evaluation method contained in this Handbook has as its main purpose to assist Tacloban to determine the degree to which these sub-projects, across the sectors, ultimately prove to be successful.

## **2. Sector Descriptions**

A brief description of each of the sectors and sub-projects follows. These descriptions are not meant to be definitive, but are presented here only for illustrative purposes.

- a. **Land Use Sector:** This Sector provides a broad matrix for some of the other sectors and their applicable strategies. It contains a city land use plan that emphasizes resource conservation and the use of a computerized data storage and analysis system.

This Sector further encompasses a sub-project in urban farming that focuses on the utilization of idle urban land for the production of food/produce, livestock, and ipil-ipil trees. Thirty barangays have been identified for these production purposes.

The essential elements of this Sector are as follows:

- Guidelines and standards (zoning codes, land-use allocations, building codes, materials, drainage designs, etc.).
- Relating industrial areas and production to major housing areas, transport arteries, communication networks, waterways, etc.
- Methods and facilities for protection of shoreline, watersheds, drainage system, water supply, etc.
- Accurate assessment of changes in land usage patterns through aerial photography, surveys, cartography, etc.
- Upgrade data handling of urban transactions involving utilization of urban resources through improved data processing methods including use of computers.
- Improve usage of idle urban land for agriculture and aquaculture to improve local food supply and increase incomes.

**(1) LAND USE SUB-PROJECT 1: LAND USE PLAN REVISION**

**(a) Approach**

1) Review and update the Framework Development Plan and Comprehensive Development Plan based on 1980 socioeconomic profile and MEREC:

- Review and comment on Framework Development Plan goals and objectives.
- Initiate city review and update of Framework Development Plan goals and objectives. Send to Tennessee Valley Authority.
- Review of 1970-1980 changes in socioeconomic data and submit draft Framework Plan to Comprehensive Development Plan.
- Accomplish city review of revised Framework Development Plan.

2) Complete Aerial Survey:

- Arrange interview of survey firm to discuss survey requirements.
- Prepare scope of work for survey and topographic map.
- Invite proposals based on scope of work, schedule and budget.
- Select and contract for survey and topographic work.

3) Update Existing Land Use Map:

- Conduct land use field survey using area maps.
- Using field survey information prepare aerial photo overlay showing land use (desired scale: urban core 1:1000, rural areas 1:5000).
- Adoption of Revised Land Use Plan.

- 4) Develop data bank Comprehensive Development Plan training in computer programming and equipment for three persons. Schedule will be based on discussion with college personnel and Socio-Economic Systems corporation staff.

**(2) LAND USE SUB-PROJECT 2: URBAN FARMING**

**(a) Sub-Project Goals**

Twenty barangays with sufficient lots for backyard gardening and livestock production will be identified by the City Agricultural Office as pilot sites. Another ten barangays will be identified for ipil-ipil production.

**(b) Primary Objective**

The urban agriculture program is designed to make maximum use of idle urban land to increase food supplies and family incomes.

**(c) Approach**

1) Information, Education and Training:

- Purchase equipment (projector, camera, motorcycle and supplies).
- Design barangay information and information and instruction program.
- Barangay introduction to program with the aid of the carousel, camera, megaphone and motorcycle in barangays.

2) Site Identification and Design:

- Listing of interested households and identification of ideal urban sites for backyard plots, animal production and ipil-ipil tree plantings.
- Design impact evaluation approach.

**3) Field Implementation:**

- Construction and fencing of backyard plots, including seed plots.
- Distribution of seeds and commencement of demonstration activities.
- Construction of poultry and swine houses.
- Planting of ipil-ipil tree seedlings--continuous activity.
- Spraying and fertilizing plots as needed (continuous activity).
- Supervision, education and evaluation (continuous activity).

**4) Plans and Programs Developed:** These will be based on evaluation results for improvement, expansion and continuation of program.

**b Transportation Sector:** This sector serves to bind together the other sectors and serves as an important sector in land use planning and implementation as well as for devising means of assessing fuel consumption in the city over the life of the MEREC project. Therefore, the City Transportation System involves the need for a classification of the different types of vehicles in use, such as private vehicles, those for hire (school buses and tricycles), and vehicles used for public and governmental purposes.

The main elements of this sector are:

- Traffic management methods and techniques.
- Use of Master Plan Strategy as method for improving transport.
- Use of traffic training and education programs.

**(1) TRANSPORTATION SUB-PROJECT 1: SHORT-TERM ASSESSMENT OF SYSTEM IMPROVEMENTS**

**(a) Approach**

- List short-term improvements needed.
- Prepare schedule for implementation.
- Prepare written memo on short-term measures.

**(2) TRANSPORTATION SUB PROJECT 2: TRAFFIC MASTER PLAN**

**(a) Approach**

- Setting goals and objectives
- Prepare scope of work for consultant
- Prepare inventory of existing information and data
- Prepare study design budget and schedule
- Hire support personnel.
- Collect data.
- Tabulate and analyze data.
- Make projections.
- Prepare alternative measures with cost estimate
- Evaluate alternatives
- Prepare final plan and budget

**(3) TRANSPORTATION SUB-PROJECT 3: TRAFFIC EDUCATION PROGRAM**

**(a) Approach**

- Plan Education Program
- Prepare schedule
- Implement program
  - In schools by March 1984
  - For adults by May/June 1984

**c Waste Management Sector:** This sector involves ways to improve overall sewer and drainage conditions. This will be achieved by exploiting considerable opportunities for waste recovery and recycling through the installation of centralized containers in ten commercial areas, installation of a biogas plant at the slaughterhouse, provision of an oxidation pond at the biogas plant, and by using push carts for collection of refuse in designated streets.

The main characteristics of this Sector are:

- Survey of city's waste materials.
- Evaluate solid waste management system.
- Appraise efficiency of recycling methods.
- Appraise environmental sanitation methods.
- Appraise impact on collection efficiency from increasing number of collection sectors, use of handcarts, etc.
- Appraise impact from use of pilot plants for separation, recycling, utilizing, and/or upgrading private scavengers.
- Use of compost sites to convert waste remnants for use in farming.
- Use of public information to improve sanitation through participating in an improved public waste strategy.

**(1) WASTE MANAGEMENT SUB-PROJECT 1: PUSH CARTS**

**(a) Approach**

- Design and estimate cost.
- Solicit public bidding.
- Fabricate test unit.
- Identify and select dumpsite.
- Modify design.
- Fabricate remaining units.
- Implement demonstration project

**(2) WASTE MANAGEMENT SUB-PROJECT 2:  
CENTRALIZED CONTAINERS**

**(a) Approach**

- Design and estimate cost.
- Solicit public bidding.
- Fabricate units.
- Community drive.
- Implement demonstration project, introducing two containers per week.

**(3) WASTE MANAGEMENT SUB-PROJECT 3: BIOGAS AND OXIDATION POND**

**(a) Approach**

- Selection of training area and consultant.
- Training of engineer and technicians
- Design and estimate cost with a consultant
- Construction, using local people
- Review by consultant
- Implement demonstration.

**d. Housing Sector:** In this sector the MEREC strategy focuses on the use of indigenous materials for home construction in a specific demonstration project area. The fourteen units in the demonstration area will utilize indigenous building materials that will be chemically treated to improve passive cooling and lighting capabilities.

The main elements of this Sector are:

- a) To improve use of indigenous materials and designs of homes in order to:
  - Make maximum use of indigenous materials.
- b) Create environmental designs that will:
  - Maximize passive cooling
  - Utilize natural lighting
  - Collect usable and potable rainwater

**(1) HOUSING SUB-PROJECT: DEMONSTRATION HOUSING**

**(a) Approach**

- Clear design with Human Settlements.
- Reproduction of 24 plans needed.
- Certification of availability of funds.
- Advertise for bids.
- Select contractor.
- Award contract.
- Prepare site.
- Construct houses.
- Select occupants.
- Project evaluation by contractor.

- Design biodigester and cost estimate.
- Review of biodigester design by Tennessee Valley Authority.
- Construct biodigestors under contract.
- Evaluation by contractor.
- Design oxidation pond.
- Review of pond design by Tennessee Valley Authority.
- Construct pond.

e. **Water and Sewer Sector:** In the sewer area, the effort will be to improve drainage of flooded lands to increase their value and reduce concomitant pollution. The water area will be basically responsible for seeking to reduce water losses, thereby reducing water costs and supply.

The basic requirements of this Sector are:

a) **Sewer:**

- Complete required surveying.
- Interpret aerial photographs.

b) **Water:**

- Account for water usage through elimination of illegal connection.
- Reduce leakage.
- Recalibrate and correct meters at source and in reservoirs.
- Minimize water wastage through fire hydrants.
- Correct incorrect home meters.
- Intensify education and information campaigns to encourage efficient water usage.

**(1) WATER AND SEWER SUB-PROJECT: TOPOGRAPHIC SURVEY**

**(a) Primary Objective**

Establishment of concrete bench mark preparatory to the aerial photographic survey.

**(b) Approach**

- Preliminary works:
  - Consultation and coordination with aerial surveying company
  - Acquisition of materials and support personnel
- Field works:
  - Construction of bench mark
  - Flight survey work
- To be completed in Tacloban by City officials

**f. Electricity Sector:** This Sector is central to the MEREC strategy because it is the focus of the elimination of energy and resource losses through pilferage or other forms of line leakages. Electricity loss detection will be done with the use of calibration equipment and corrective measures will serve to increase availability of electricity to the benefit of consumer units, in the provision of better service, and assistance in brownout reduction.

The main elements of this Sector are:

- a) To ready community for delivery of power through power plants.
- b) To promote use of indigenous materials such as rice hulls, coconut husks, ipil-ipil wood, on a commercial scale.

**(1) ELECTRICITY SUB-PROJECT 1: METER CALIBRATION**

**(a) Goals**

- Calibrate and correct meter readings.

**(b) Primary Objective**

- Reduction of wasted electric current.

**(c) Approach**

- Purchase phantom load and watt-hour meter standard for kilowatt-hour meter calibration.
- Conduct calibration survey.
- Eliminate or repair poorly calibrated meters.

**(2) ELECTRICITY SUB-PROJECT 2: DESIGN AND IMPLEMENT ENERGY AUDIT PROGRAM**

**(a) Goals**

- To reduce leakage and improve efficiency.

**(b) Primary Objective**

- Design and implement energy audit program geared to households, commercial establishments and industries.

**(c) Approach**

- Provide Tennessee Valley Authority audit consultant for design work with National Economic and Development Authority and LEYECO.
- Initiate and continue audit program.

**(3) ELECTRICITY SUB-PROGRAM 3: DEMONSTRATION AREA**

**(a) Primary Objective**

- Provide lateral line to housing demonstration area.

**(b) Approach**

- Provide single-phase construction to Bliss at Nula-tula (attaches 14 unit demonstration village).

**g. Education and Training Sector:** An innovative and vital aspect of MEREC involves the active participation of the educational, training, community, and technical resources of Tacloban in this Sector. This Sector involves the development of graded curriculum materials; these will present information and develop skills involving both concepts and practice relating to energy efficiency and resource utilization. These curricular materials will be developed through utilization of Tacloban City schools system resources at every level. Such MEREC related course materials will be presented weekly in both grade and high schools.

In addition, there will be MEREC-related radio broadcasts, including dramatizations and presentations by authorities. An incentive program will also be used to encourage the production of essays, posters, TV and radio dramas, etc., based on the theme of greater efficiency in use of resources and fuels in Tacloban.

The main elements of this sector are:

- a) Check, coordinate, support education information component of different sectors:
- Electricity
  - Water
  - Solid waste
  - Urban farming
  - Transportation.

- b) **Schedule and coordinate regular visits to Demonstration Community:**
- **Pre-Occupancy:** during construction--to look into quality and strength and availability of local materials for housing; after construction--to assess the structure and architectural practicability of indigenous materials and design; post-occupancy: to assess energy and other resource efficiency of houses constructed.
- c) **Utilize local radio stations to broadcast vital MEREC information:**
- **Radio interview of MEREC consultants**
  - **Radio plays and jingles on conservation**
  - **School and non-school quiz programs**
- d) **Organize dialogues on MEREC projects with various groups:**
- **Barangay officials**
  - **Student groups in high schools, colleges, and universities**
  - **Parents groups in elementary and high schools**
  - **Clubs, i.e., Rotary, Lions, Jaycees**
  - **Non-formal education groups**

# *CHAPTER III*

## CHAPTER III

### AN APPROACH TO MEASURING IMPACT IN DEVELOPMENTAL PROJECTS

#### A. The Impact Frame of Reference

Measurement of impact is often a matter of perspective. The impact of a collision between two automobiles is viewed differently by a hospitalized victim and the mechanic hired to do the repair work. For one, the impact resulted in pain, for the other, it presents the opportunity for profit.

Impact always has some consequence, good or bad. In the present situation the purpose is to evaluate the impact of the MEREC Project in the City of Tacloban in the Philippines. In evaluating impact in this context, we have sought to construct a method of measurement that would provide an objective, and where possible, a quantitative means of evaluating changes in energy efficiency and resource utilization as a result of MEREC.

The issue of impact in developmental projects is vital. If the impact is negative, the implication is that it would have been better if the project had not been done at all. If there is no measurable impact, the project is seen as possessing no discernible value, and, of course, if the impact of the project is positive, the value of the project is affirmed objectively.

Of course it may be argued that all projects possess some value, independent of impact, by the fact that they produce employment, involve communities in the change process, and introduce new methods and concepts into developing economies.

In the current perspective, a developmental project represents a technical intervention that may or may not possess positive value. The question of its true impact value can only be determined by establishing the degree to which it met its defined objective(s). This requires the following:

1. That the objectives of developmental projects be defined in ways that can be objectified and quantified; and,
2. That some source of information is available that can be used to measure the attainment or non-attainment of the primary objective for which the project was initiated.

No developmental project is begun to maintain the status quo; all projects are expected to produce some impact as is evidenced by some change or improvement over existing conditions. For example, if a project is concerned with increasing the number of watts of electricity available per resident, per month, the impact measures must take into account the following:

1. **Baseline Measure:** This is the measure of the trend over the recent past that could reasonably be expected to continue;
2. **Baseline Projections:** This is the best estimate of what could be expected over the years ahead if the project had not intervened;
3. **Point of Project Intervention:** This is the point at which the developmental project is initiated and becomes operational;
4. **Impact Attribution:** Once a project has become operational and the measurement exceeds the baseline projections, the change(s) that occur may be attributable to the impact of the project; certainly if no other condition but the project existed, then the attribution of impact would be justified. But as all developmental projects take place in a complex living environment of individuals, families and communities (which are themselves subject to many sorts of other impacts from local, regional, national and world sources), it is necessary to link impact to projects with great caution. For example, if electricity is produced by oil-driven generators, a project to increase wattage per resident could appear to have failed because of an upward shift in world oil prices and might appear remarkably successful if oil prices fell sharply; the local impact of the project itself might be slight as compared with very powerful outside forces.

#### **B. Limitations of Impact Assessment**

As noted earlier, a project may be irrelevant (possess no impact); it may be counterproductive (possess negative impact); or it may be relevant (possess positive impact). To make the impact problem even more complex, the impact of a project may be delayed, it may be negative, then positive, or vice-versa; even more to the point, a developmental project takes place in a single community within a provincial environment that possesses little control over regional, national, and

world forces. For example, the major contributor to energy prices may be the contest between the many oil producing countries and the oil companies for business, which is complicated by the pressures exercised by OPEC to sustain prices through control of production and marketing mechanisms. Although a project to reduce the local cost of consumption of gasoline is justified, the impact of such a project may be confounded by the interplay between OPEC, the oil-producing countries, and the oil companies. If the impact were to prove positive by other measures, for example, we cannot with any certainty determine how much impact was due to the project and how much impact occurred as a result of forces outside of project control. (See: Design and Evaluation of AID-Assisted Projects, USAID, Training and Development Division, November 1980, pp. 240-46, for a carefully articulated discussion of the importance and difficulty involved in project impact measurement, Appendix A).

Thus, it is obvious that developmental projects take place for a purpose, and that purpose is to impact the socio-economic environment in such a way as to justify substantial expenditures of funds, time, personnel, and general technical assistance by USAID. More importantly, though impact results may appear murky for any given project, at any given time, the impact value of a project should be assessed by tendencies toward change (positive or negative) in a number of indicators that are as independent from each other as possible. Projects are replicated when projects with the same basic objective(s) take place in different geographic, political, demographic environments at different times. In such contexts measures of impact are also replicated. Where such replication takes place we may obtain better understanding of the impact resulting from the project through the use of standard statistical techniques in order to:

1. Seek to uncover strengths and weaknesses in the approach;
2. Estimate the probability that the project will result in significant and productive change;
3. Compare the relative magnitude of a number of different indicators. For example, in the MEREC project, through the use of standardized impact values it will be possible to perform such comparisons as the following:
  - a. Compare impact values within sub-projects;
  - b. Compare impact values across sub-projects;

- c. Compare impact values between resource areas;  
and
- d. Compare impact values for sectors with  
impact values for resources.

The objective and quantified measurement of developmental projects is further complicated by such factors as:

- Changes in the socioeconomic and political environment in which the project takes place;
- Changes in the key players in the donor agency and the host country consumers;
- Changes in the level of support provided because of budgetary pressures;
- Changes due to geographic events, such as floods, earthquakes, droughts, etc.

Beyond these special barriers to project measurement, there is the more general problem faced by developmental projects, which is that all societies resist change because they seek to continue the habits, attitudes, and beliefs that are unique to their particular economic, social, and cultural settings.

# *CHAPTER IV*

## CHAPTER IV

### FIGURE 1: THE MEREC IMPACT INDICATOR DEFINITION CHART

The measurement of impact is difficult. The impact of a project, like a baseball player's batting average, provides a realistic means of estimating whether or not the effort and resources involved in providing support proved to be justified in objective and quantified terms. The measurement is made no less demanding by the many geographic, economic, social, and political barriers that are always present in developmental project contexts and merely add emphasis to the importance of measuring project impact. Figure 1 (MEREC Impact Indicator Definition Chart) reflects our effort to concretize some of the essential characteristics of impact measurement in the context of evaluating the impact of the MEREC Project.

Table I is essentially a glossary of terms used in Figure 1. It provides a more detailed description of the basic terms and relationships involved in the indicator definitions of Figure 1. The encircled number at the upper left of Figure 1 and the numbers in the left column of Table I are cross-coded to provide the reader with more detailed information than is provided in the following brief description of Figure 1.

#### 1. Description of Figure 1

- a. **Defining Impact Value:** In this formulation, a project is assumed to possess impact to the extent that it achieves its goals as measured in objective and quantified terms. A project that attains only half of its objectives possesses an impact value of 50 percent; if it achieves nothing, its impact value is zero percent. The absolute essential for impact measurement is to establish a final project goal or target that can be measured in the same units from some period of time before the project starts (baseline), throughout project implementation to completion. In Figure 1, the project goal is shown by Item #9 (Target Value Indicator) and Item #10 (Target Value In Percent). The basic relationships in measuring impact value involve determining the degree to which Actual Achievement (see Legend in upper right of Figure 1) reached the Projected Value of the indicator (shown by the dash-circle line).

Figure 1.

MEREC Impact Indicator Definition Chart

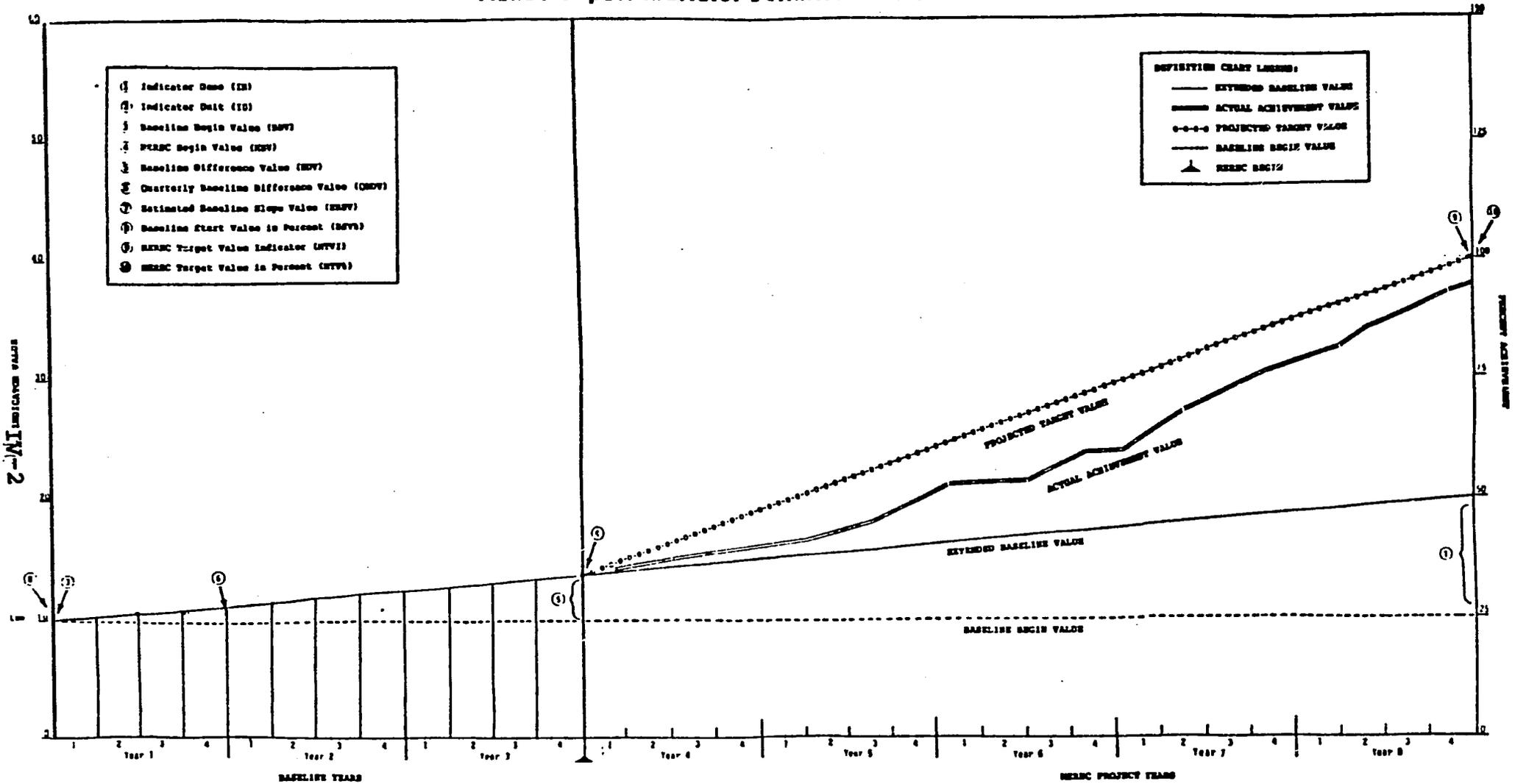


Figure 1 is a graphic illustration of basic indicator relationships involved in arriving at the impact value of a developmental project. (See Table I for more detailed definitions and computations.)

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TABLE I

## MEREK IMPACT DEFINITION REGISTER COMPUTATION FORM

Number	Definition of Terms	Formula/Computation
1	INDICATOR NAME; Change in consumption of electricity over course of MEREK Project.	
2	INDICATOR UNIT: Measures will be based on the mean difference in rate of consumption in kilowatts per resident, per year.	<p>KW/year where there are 10,000 residents and 1,000,000 KW consumed per year, then:</p> $\text{KW/R/year} = \frac{1,000,000}{10,000} = 100$ $\text{KW/R/year} = 100$
3	BASELINE BEGIN VALUE (BBV) is the initial value of baseline, expressed in indicator units and percent, twelve quarters or less before MEREK began. See Figure 1, #4, 13 Indicator Units.	MBV is the first point used in calculating the extended baseline value which is projected through the 5 MEREK Project years.
4	MEREK BEGIN VALUE (MBV) is the value of the indicator, expressed in indicator units and percent on the first day of MEREK Project funding.	MBV is defined as equal to the extended baseline value on the final baseline day.
5	BASELINE DIFFERENCE VALUE (BDV) is the difference in indicator units and/or percent between the BBV and the MBV.	$\text{BDV} = \text{BMV} - \text{BBV} \quad \text{Where BMV} = 13, \text{BBV} = 10$ $\text{Then: } \text{BDV} = 13 - 10 = 3$

Table I: Basic terms, definitions, and computations involved in computing project impact values. See Figure 1 for a graphic illustration of relationships.

TABLE I

## MERIC IMPACT DEFINITION REGISTER COMPUTATION FORM (Continued)

Number	Definition of Terms	Formula/Computation
6	<p>QUARTERLY BASELINE DIFFERENCE VALUE (QBDV) reflects the mean change in the value of the indicator and/or percent during each of the baseline quarters (<math>Q_n</math>).</p>	<p><math>QBDV = \frac{BSV}{Q_n}</math> ∴ where the total baseline slope was equal to 33% (<math>BSV = 33\%</math>) and there were 12 quarters (<math>Q_n = 12</math>), then:</p> $QBDV = \frac{33}{12} = 2.5\%$ <p>This means that for each quarter, during the baseline period, the baseline value is increased by 2.5%.</p>
7	<p>ESTIMATED BASELINE SLOPE VALUE (EBSV) is the ratio formed from dividing the difference in indicator units from the beginning to the end of the baseline period (BDV) by the value of the baseline at the start of the baseline period (BBV).</p> $EBSV = \frac{BDV}{BBV} \text{ where } BDV = MBV - BBV$	<p><math>EBSV = \frac{BDV}{BBV}</math> ∴ where <math>BBV = 10</math>, and <math>BMV = 13</math>, then <math>EBSV = \frac{13 - 10}{10} = .30</math> This is interpreted to mean that the indicator increased in value by 30% over the baseline period, which is normally 36 months in length.</p>
8	<p>BASELINE START VALUE IN PERCENT (BSV%) represents the ratio between the value of the indicator at the point when the baseline measures began (BBV, 36 months prior to MERIC funding, if possible) and the Target Indicator Value (TIV), the goal of the sub-project at the conclusion of the MERIC Project:</p> $BSV = \frac{BBV}{TIV}$	<p><math>BSV = \frac{BBV}{TIV}</math> where <math>BBV</math> is 30 Indicator Units and <math>TIV</math> is projected as 70 Indicator Units, then</p> $BSV = \frac{30}{70} = 43\%$

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TABLE I

## MEREC IMPACT DEFINITION REGISTER COMPUTATION FORM (Continued)

Number	Definition of Terms	Formula/Computation
9	<p>MEREC TARGET INDICATOR VALUE (TIV) is the best estimate made as to the magnitude of the indicator upon completion of the MEREC Project; the TIV value is projected 20 quarters (60 months) following the MEREC Begin Value (MBV).</p>	<p>The TIV provides the basis for defining the level of impact of a sub-project. The TIV and the Actual Achievement Value (AAV) form the basis for evaluating the degree of impact (Impact Value, IV) of the sub-project;</p> <p><math>IV = \frac{AAV}{TIV}</math>. For example, where: TIV = 60 and AAV = 60, then: <math>IV = \frac{60}{60} = 1.00</math>; where TIV = 60 and AAV = 50, then <math>IV = \frac{50}{60} = .83</math> and where TIV = 50 and AAV = 60, then <math>IV = 1.20</math>.</p>
10	<p>MEREC IMPACT VALUE IN PERCENT (MIV%) represents the ratio between the Target Indicator Value (TIV) and the Actual Indicator Value Achieved (AIV):</p> $MIV\% = \frac{AIV}{TIV}(100)$	<p><math>MIV\% = \frac{AIV}{TIV}(100)</math> where TIV = 70 and AIV = 68, then <math>MIV\% = \frac{68}{70} = 98\%</math>. An MIV = 97% means that the Project, as measured by the specific indicator, possessed 97% of its intended impact.</p> <p>MIV% provides a standardized method of comparing relative impact; MIV% is of special importance where impact values are being compared for different sub-projects, communities, or different approaches to the same problem.</p>

IV-5

Basically, then, to the degree that Actual Achievement Values reach or exceed a projected target value, impact values are high. To the extent that Actual Achievement Values are below projected target values, the impact value of the project is reduced.

- b. **Baseline Considerations:** Baseline values are fundamental to measuring impact. For example, if timber production had been increasing at the rate of 3 percent per year, in the absence of any project it is reasonable to expect that a timber production project to justify its costs, should result in an increase of greater than 3 percent per year; after five project years, there should be a measurably greater increase than 15 percent in timber production. In Figure 1 the beginning of the baseline year is established as three years (36 months) before the project begins; the time at which the project begins is shown by the pyramid symbol below the abscissa. Also note that the indicator value was 10 units when the baseline began (Item #3: Baseline Begin Value) and had reached 13 units when the project began (Item #4: MEREC Begin Value). The difference between the Baseline Begin Value (10 units) and the MEREC Begin Value (13 units), reflects indicator gains that took place in the absence of the MEREC Project (30 percent in three years). The Extended Baseline Value (unbroken line) presents the gains on the indicator, which are assumed to occur over the course of project years.

c. **Computing the Project Impact Value:**

The value of the indicator, as shown by the Extended Baseline Value, doubles over the project years. This means that, under the conditions shown, to produce any impact at all, the indicator value must increase two-fold or more; the projected increase is from 10 to 41. The project objective seeks to increase the value of this indicator more than four-fold. This projected indicator value (Target Indicator Value) is shown on the dash-circle line; upon project completion it is assigned a percent value of 100 percent. Actual project performance (double line) was 37 indicator units upon completion.

Note that the Extended Baseline Value increased from 13 indicator units upon project initiation to 20 indicator units by completion. Thus, the indicator value would have doubled in the absence of the MEREC Project.

With the MEREC Project, Figure 1 indicates that the indicator value (41 upon project completion) had more than doubled. In terms of the present formulation:

$$\text{MIV\%} = \frac{\text{AIV}}{\text{TVI}} = \frac{37}{41} = 90\%$$

(See Table I, Item #10, for more detail).

# CHAPTER V

## CHAPTER V

### THE MEREC IMPACT EVALUATION FORMS

#### A. INTRODUCTION

This section has two purposes. The first is to briefly describe each of the forms prepared for evaluating the impact of the MEREC Project in Tacloban City, Philippines. The second is to present the steps involved in completing each of the forms when not self-evident.

#### B. MEREC FORM DESCRIPTIONS

##### 1. Figure 2: MEREC Sector Overview Form

This form presents:

- a. The sector in which the sub-project takes place;
- b. The general purpose of the sector;
- c. The sectors that are involved in coordinating the project;
- d. The primary objective of the sector;
- e. Information on each sub-project to be performed, including:
  - (1) Title
  - (2) Primary objective
  - (3) Indicator
  - (4) Target Indicator Value

##### 2. Figure 3: MEREC Sub-Project Overview Form

This form, which is completed for each sub-project, lists some selected essential sub-project information, such as:

- a. Sector title
- b. Sub-project title
- c. Responsible official
- d. Primary purpose
- e. Measurement Indicator
- f. Initial Baseline Value (Begin Baseline Value)

- g. MEREC Begin Value (indicator value when project began)
- h. Baseline Slope Value
- i. Data collection source
- j. Data collection method
- k. Projected Target Indicator Value
- l. Approach to be used in the sub-project

**3. Figure 4: Indicator Achievement Register**

This form provides the basic project record for each indicator by month, quarter, and year. Note that each form covers one full year (Column 1). A five-year project, such as MEREC, involves completion of five Indicator Achievement Register Forms for each indicator (one form per year). The form itself provides a method of remaining current on project achievement by month and/or quarter.

**a. Extended Baseline Value Column**

At the point of MEREC Project initiation (shown by pyramid symbol in Figure 1), the extended Baseline Values are calculated; the method of calculation is shown in Table I, Item #7, the Estimated Baseline Slope Value. Note that both the Projected Indicator Value and the Percent Value are projected both monthly and quarterly. These calculations are done for all five project years (60 months, 20 quarters) at the outset, reflecting the projected values of the baseline anticipated over the life of the project. The Extended Baseline Value projects the changes in the indicator that could have been expected without any project at all, based on existing trends.

**b. MEREC Projected Target Value Column**

The MEREC Projected Target Value is shown in Figure 1 as the dash-circle line that begins at the point where the project starts (MEREC Begin Value) and ends at the level projected in the project proposal. These values can also be calculated prior to project initiation for each month and quarter over the life of the project; these projections overlap the Projected Target Value line on Figure 1.

Thus, prior to actual project initiation, the Indicator Achievement Register should contain:

- 1) Extended Baseline Values covering the entire project period, computed through projecting baseline trend values.
- 2) Projected Target Values obtained by joining the known indicator value at the start of the project with the final indicator value designated as the objective to be achieved on project completion.

**c. Actual Achievement Value Column**

The Actual Value is shown in Figure 1 as the double-line. The items in this column are completed monthly, quarterly, and annually as the project proceeds. The actual indicator values, whether in electrical, liquid, financial, or other units, are collected periodically, and entered under the Actual Achievement columns at appropriate intervals. Indicator column entries are in indicator units.

**d. Impact Value Column**

The Impact Value reflects the ratio between what was projected and what was actually attained (See Item #10 in Table I). The Impact Value column entries are also made periodically for each indicator by the ratio:

$$IV = \frac{AAV}{PTV}$$

The AAV is obtained from the Actual Achievement Value for the month and/or quarter. The PTV is obtained by using the indicator value projected under the MEREC projected Target Value for the given month.

**4. Figure 5: MEREC Indicator Data Collection Summary Form**

This form has as its main objective the specification and standardization of the conditions of data collection, tabulation, and computation of the indicator. Its primary purpose is to assure that entries into the MEREC Indicator Achievement Register are used for obtaining:

- a. Baseline measures
- b. Baseline extensions
- c. MEREC Target Values
- d. Actual Achievement Indicator Values

The required use of standard procedures for data collection, whether by surveys or by reading thermometers or water meters, requires that it be done by systematically and repetitively; where data are not systematically based on the same units, the data possess no more value than a rubber tape measure.

The MEREC Indicator Data Collection Summary Form may be used by itself, where the data collection is simple and routine, or can be expanded with appendices, where the data collection is elaborate. The items to be completed are self-evident, but in practice much effort may be involved. For instance:

- a. **Measurement Method:** This item specifies what is to be measured and the units of measurement.
- b. **Frequency of Data Pick-up:** This item indicates whether data are to be collected daily, weekly, or monthly.
- c. **Location(s):** This item specifies where the data will be obtained, whether in a book, a location in a house, or on a street corner
- d. **Data Computation:** This item specifies the method of tabulation and organization to be used to produce the basic measures. This item also refers to the particular computation to be used monthly for making entries into the Indicator Achievement Register

- e. **Data Entry:** This item indicates where the data are to be entered both on the MEREC forms and for other official purposes.

**5. Figure 6: MEREC Sub-Project Impact Value Profile:**

This form has three basic purposes:

- a. To provide a simple means of plotting Impact Achievement Value quarter-by-quarter and year-by-year for each given indicator. This form can be blown up as a wall chart to provide achievement feedback as measured by Impact Value for each of the sub-projects.
- b. For Tacloban as a whole, Figure 6 provides a means for comparing each sub-project for achievement of impact values since all impact values are in percent.
- c. For the MEREC Project, globally, the Impact Value Profiles may be used as a means of graphically illustrating impact values for different sub-projects in different communities and/or countries. This can be done in a variety of ways, such as:
  - 1) Setting up profiles to show all indicator values in a given community and/or country across project years.
  - 2) Obtaining mean indicator values by community and/or country and showing several projects on a single appropriately titled profile

**6. Figure 7.: MEREC Resource Indicator Summary Value Profile:**

As the MEREC Project proceeds, Indicator Values will change not only in sectors (see MEREC Worksheet for Tacloban). Although such changes in indicator values cannot be attributable to a sub-project, the fact is that changes in indicator values can be anticipated in the course of the MEREC Project. Such resource-related changes may prove to contain valuable information related to the impact of MEREC as a whole, not attributable to any specific sector. Figure 7 provides a method of graphically presenting changes in impact value that are related to one or more resources rather than to sectors.

# *CHAPTER VI*

**CHAPTER VI**

**SECTOR:** Electricity

**SUB-PROJECT:** Revamp Lines and Meters

**FIGURE VI-1**

**SECTOR COMPLETION REQUIREMENTS FORM**

**A. COORDINATION TASKS REMAINING**

1. MEREC Sector Overview Forms
2. MEREC Sub-Project Overview Form
3. MEREC Impact Indicator Definition Charts
4. MEREC Indicator Data Collection Summary Forms
5. MEREC Indicator Achievement Registers

* Submitted	To be ** Completed
X	
X	
	X
	X
	X

**B. COMPLETION NOTES**

- A-1 Information Submitted
- A-2 Information Submitted
- A-3 Tacloban data being assembled; Definition Charts required for Finance, Service and Energy Indicators
- A-4 Tacloban data being assembled; Data Collection Summary Forms required for Finance, Service and Energy Indicators
- A-5 Tacloban data being assembled; Achievement Register Forms required for Finance, Service and Energy Indicators

\* Submitted: Tacloban officials review information with MEREC representatives and make changes based on best available Tacloban information consistent with MEREC project objectives.

\*\* To be Completed: Review existing information in Tacloban and working with MEREC representatives supply missing data and/or entries as required to meet MEREC objectives.

**FIGURE VI-2**

**MEREC SECTOR OVERVIEW FORM**

<b>ELECTRICITY:</b> Resource Indicator
<b>SECTOR PURPOSE:</b> Improve Efficiency of Distribution of Electric Power (Kilowatt Hours) to Consumer Units
<b>COORDINATING SECTORS:</b> Transportation, Urban Farming, Housing, and Land Use
<b>SECTOR PRIMARY OBJECTIVE:</b> Decrease Loss of Electricity in Kilowatt Hours from 22.25% to 16.0%

**M E R E C S U B - P R O J E C T S**

<u>SUB-PROJECT #1</u>	<u>SUB-PROJECT #2</u>	<u>SUB-PROJECT #3</u>
<b>TITLE:</b> Use of Calibration Equipment to Minimize Kilowatt Losses <b>PRIMARY OBJECTIVE:</b> Increase Efficiency of Electricity Delivery System in Terms of Kilowatt Hour Losses <b>INDICATOR:</b> Percent Reduction in Kilowatt Hour Loss  <b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b>  16.0%	<b>TITLE:</b>  <b>PRIMARY OBJECTIVE:</b>  <b>INDICATOR:</b>  <b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b>	<b>TITLE:</b>  <b>PRIMARY OBJECTIVE:</b>  <b>INDICATOR:</b>  <b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b>

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**TABLE VI-1**

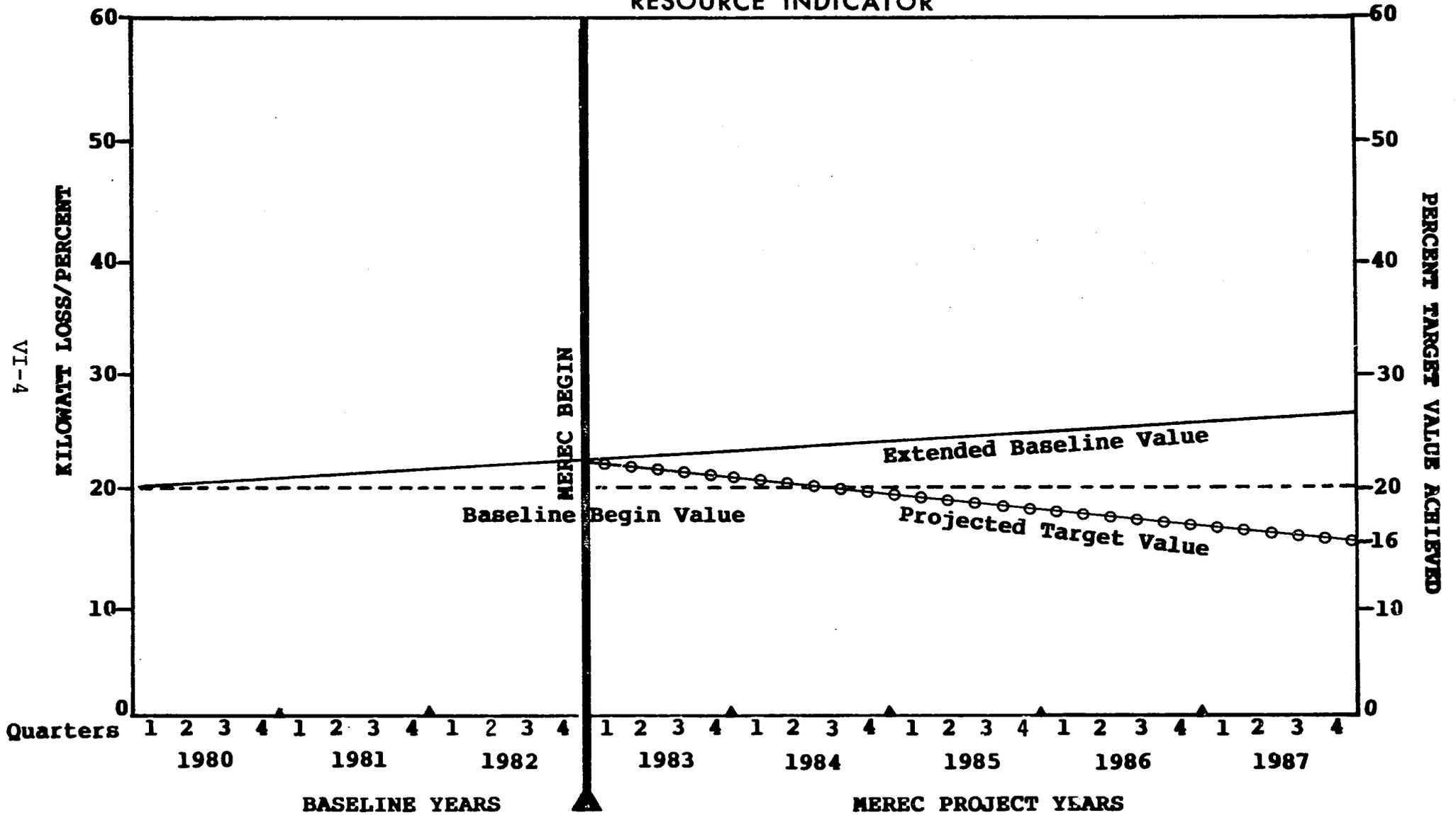
**MEREC SUB-PROJECT OVERVIEW FORM**

1	<p><b><u>SECTOR:</u></b> Electricity: Resource Indicator</p>
2	<p><b><u>SUB-PROJECT TITLE:</u></b> Revamp Lines and Meters</p>
3	<p><b><u>RESPONSIBLE OFFICIAL:</u></b> Engineer and General Manager: Evelito Elento</p>
4	<p><b><u>PRIMARY PURPOSE:</u></b> Reduce Losses of Kilowatt Hours From 22.25% to 16.0%</p>
5	<p><b><u>MEASUREMENT INDICATOR:</u></b> Percent Reduction in Kilowatt Hours Lost</p>
6	<p><b><u>BEGIN BASELINE VALUE (BBV) OF INDICATOR:</u></b> BBV = 20.39%</p>
7	<p><b><u>MEREC BEGIN VALUE (MBV) OF INDICATOR:</u></b> MBV = 22.25%</p>
8	<p><b><u>DATA COLLECTION SOURCE:</u></b> LEYECO II Records</p>
9	<p><b><u>DATA COLLECTION METHOD:</u></b> Obtain Total for Kilowatts Distributed and of Meter Readings</p>
10	<p><b><u>PROJECTED TARGET INDICATOR VALUE (TIV):</u></b> TIV = 16.0%</p>
11	<p><b><u>PROJECT APPROACH:</u></b></p> <ul style="list-style-type: none"> <li>a. Purchase Kilowatt Hour Meter Calibration Equipment</li> <li>b. Conduct Calibration Survey and Make Corrections in Lines and Meters to Reduce Losses Due to Pilferage, Leakage, and Meter Malfunctions</li> <li>c. Measure Reduction in Losses in Percent Kilowatt Hours</li> </ul>

FIGURE VI-3

MEREC IMPACT INDICATOR DEFINITION CHART  
TACLOBAN CITY

ELECTRICITY SECTOR  
RESOURCE INDICATOR



**TABLE VI-2**

**MEREC INDICATOR DATA COLLECTION SUMMARY FORM**

<b>SECTOR:</b> ELECTRICITY	<b>SUB-PROJECT INDICATOR:</b> Percent Reduction in Kilowatt Loss
<b><u>MEASUREMENT METHOD:</u></b> Obtain Data Routinely to Determine Difference Between Kilowatts Purchased by LEYECO II and Kilowatts Metered and Paid for By The Tacloban City Area	
<b><u>FREQUENCY OF DATA PICK-UP:</u></b> To be Coordinated with LEYECO II Officials	
<b><u>LOCATION(S):</u></b> LEYECO II Kilowatts Purchased from NEA and Total of Meter Readings from Residential and Industrial Buildings	
<b><u>DATA ORGANIZATION:</u></b> <ol style="list-style-type: none"><li>1. Use of MEREC Achievement Register Form (Table VI-3)</li><li>2. Enter in MEREC Sub-Project Impact Value Profile Quarterly (Figure VI-3)</li><li>3. Enter Quarterly in MEREC Resource Indicator Summary Value Profile Form in Mayor's Office (Figure VI-4)</li></ol>	
<b><u>DATA COMPUTATION:</u></b> <ol style="list-style-type: none"><li>1. Quarterly Average of Monthly Results for Entry in MEREC Achievement Register Form (Table VI-3)</li><li>2. Annual Average Every Four Quarters for Entry in MEREC Achievement Register Form (Table VI-3)</li></ol>	

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TABLE VI-3(a)

MEREC INDICATOR ACHIEVEMENT REGISTER

1983 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	May	521,940	22.30%	520,770	22.25%				
2	June	524,843	22.35	519,912	22.14				
3	July	527,753	22.40	519,272	22.04				
Q1									
4	Aug.	530,671	22.45	518,616	21.94				
5	Sept.	533,597	22.50	517,708	21.83				
6	Oct.	536,530	22.55	517,020	21.73				
Q2									
7	Nov.	539,710	22.61	516,078	21.62				
8	Dec.	542,660	22.66	515,359	21.52				
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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TABLE VI-3(b)

## NEREC INDICATOR ACHIEVEMENT REGISTER

1984 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	$IV = \frac{AAV}{PTV}$	Quarter
1	Jan.	546,124	22.71%	514,861	21.41%				
2	Feb.	549,597	22.76	514,583	21.31				
3	March	554,293	22.81	514,284	21.21				
Q1									
4	April	556,573	22.86	513,722	21.10				
5	May	560,321	22.92	513,383	21.00				
6	June	563,836	22.97	512,779	20.89				
Q2									
7	July	567,360	23.02	512,398	20.79				
8	Aug.	572,132	23.07	512,999	20.69				
9	Sept.	574,439	23.12	511,330	20.58				
Q3									
10	Oct.	577,993	23.17	510,889	20.48				
11	Nov.	581,557	23.22	508,394	20.38				
12	Dec.	585,132	23.27	509,695	20.27				
Q4									
ANNUAL SUMMARY									

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TABLE VI-3(c)

MEREC INDICATOR ACHIEVEMENT REGISTER

1985 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	588,832	23.32%	509,294	20.17%				
2	Feb.	592,543	23.37	508,619	20.06				
3	March	596,519	23.43	508,174	19.96				
Q1									
4	April	600,252	23.48	507,709	19.86				
5	May	603,996	23.53	506,966	19.75				
6	June	607,749	23.58	506,458	19.65				
Q2									
7	July	611,514	23.63	505,670	19.57				
8	Aug.	615,289	23.68	505,119	19.44				
9	Sept.	619,335	23.74	504,547	19.34				
Q3									
10	Oct.	623,132	23.79	503,692	19.23				
11	Nov.	626,939	23.84	503,077	19.13				
12	Dec.	630,757	23.89	502,177	19.02				
Q4									
ANNUAL SUMMARY									

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TABLE VI-3(d)

MEREC INDICATOR ACHIEVEMENT REGISTER

1986 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	634,711	23.94%	501,618	18.92%				
2	Feb.	638,676	23.99	500,771	18.81				
3	March	642,652	24.04	500,167	18.71				
Q1									
4	April	646,907	24.10	499,541	18.61				
5	May	650,906	24.15	498,624	18.50				
6	June	654,916	24.20	497,953	18.40				
Q2									
7	July	658,937	24.25	496,988	18.29				
8	Aug.	662,968	24.30	496,271	18.19				
9	Sept.	667,011	24.35	495,533	18.09				
Q3									
10	Oct.	671,340	24.41	494,498	17.98				
11	Nov.	675,406	24.46	493,715	17.88				
12	Dec.	679,483	24.51	492,632	17.77				
Q4									
ANNUAL SUMMARY									

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**TABLE VI-3(e)**

**MEREC INDICATOR ACHIEVEMENT REGISTER**

1987 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	$IV = \frac{AAV}{PTV}$	Quarter
1	Jan.	683,706	24.56%	491,901	17.67%				
2	Feb.	687,941	24.61	491,147	17.57				
3	March	692,187	24.66	490,089	17.46				
Q1									
4	April	696,727	24.72	489,287	17.36				
5	May	700,997	24.77	488,179	17.25				
6	June	705,279	24.82	487,330	17.15				
Q2									
7	July	709,572	24.87	486,458	17.05				
8	Aug.	713,878	24.92	485,277	16.94				
9	Sept.	718,194	24.97	484,357	16.84				
Q3									
10	Oct.	722,811	25.03	483,126	16.73				
11	Nov.	727,152	25.08	482,159	16.63				
12	Dec.	731,505	25.13	481,169	16.53				
Q4									
ANNUAL SUMMARY									

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FIGURE VI-4

MEREC SUB-PROJECT IMPACT VALUE PROFILE

SUB-PROJECT TITLE(S):

INDICATOR(S) MEASURED:

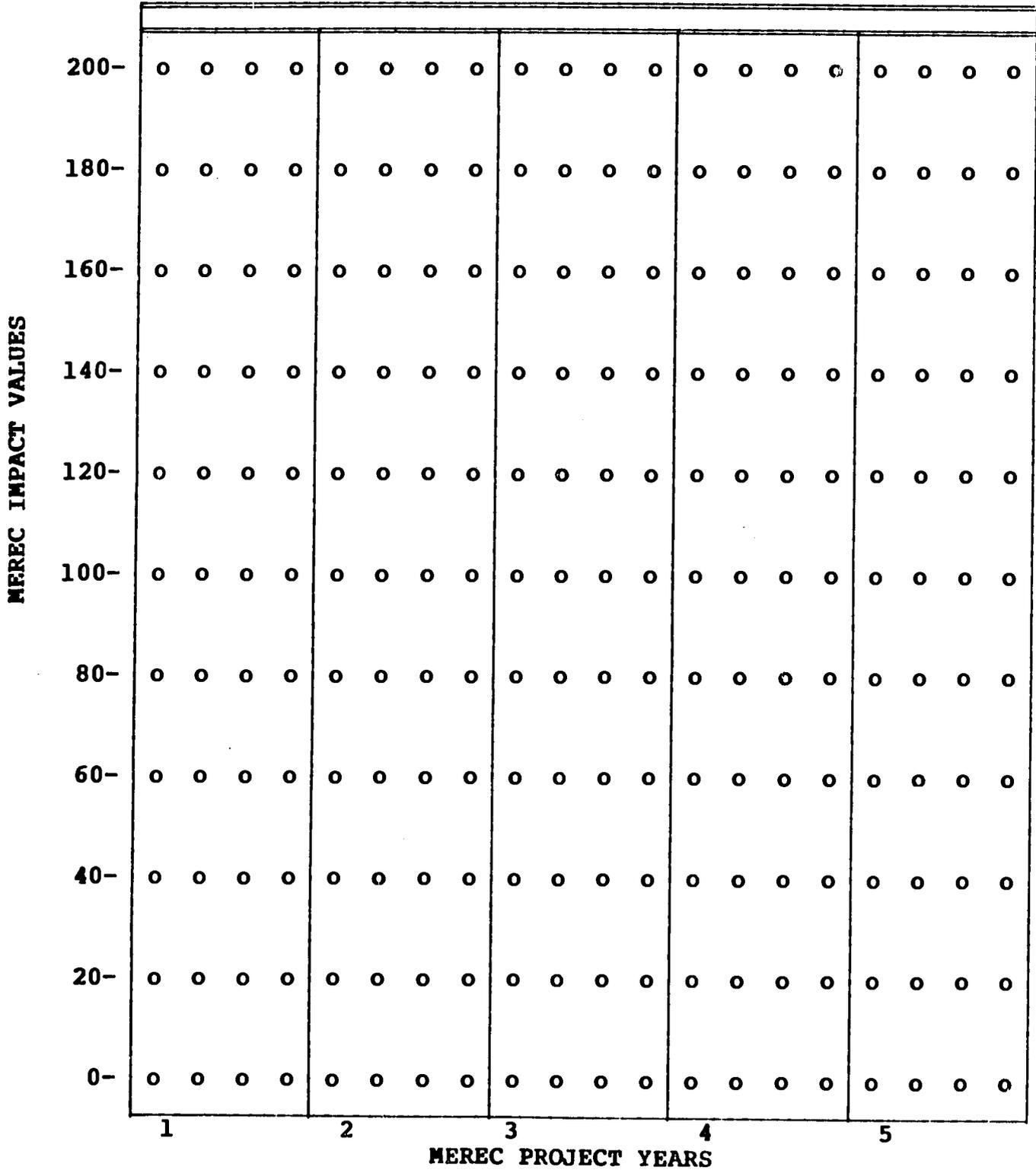


FIGURE VI-5

MEREC RESOURCE INDICATOR SUMMARY VALUE PROFILE FORM

RESOURCE(S) :

INDICATOR(S) MEASURED:

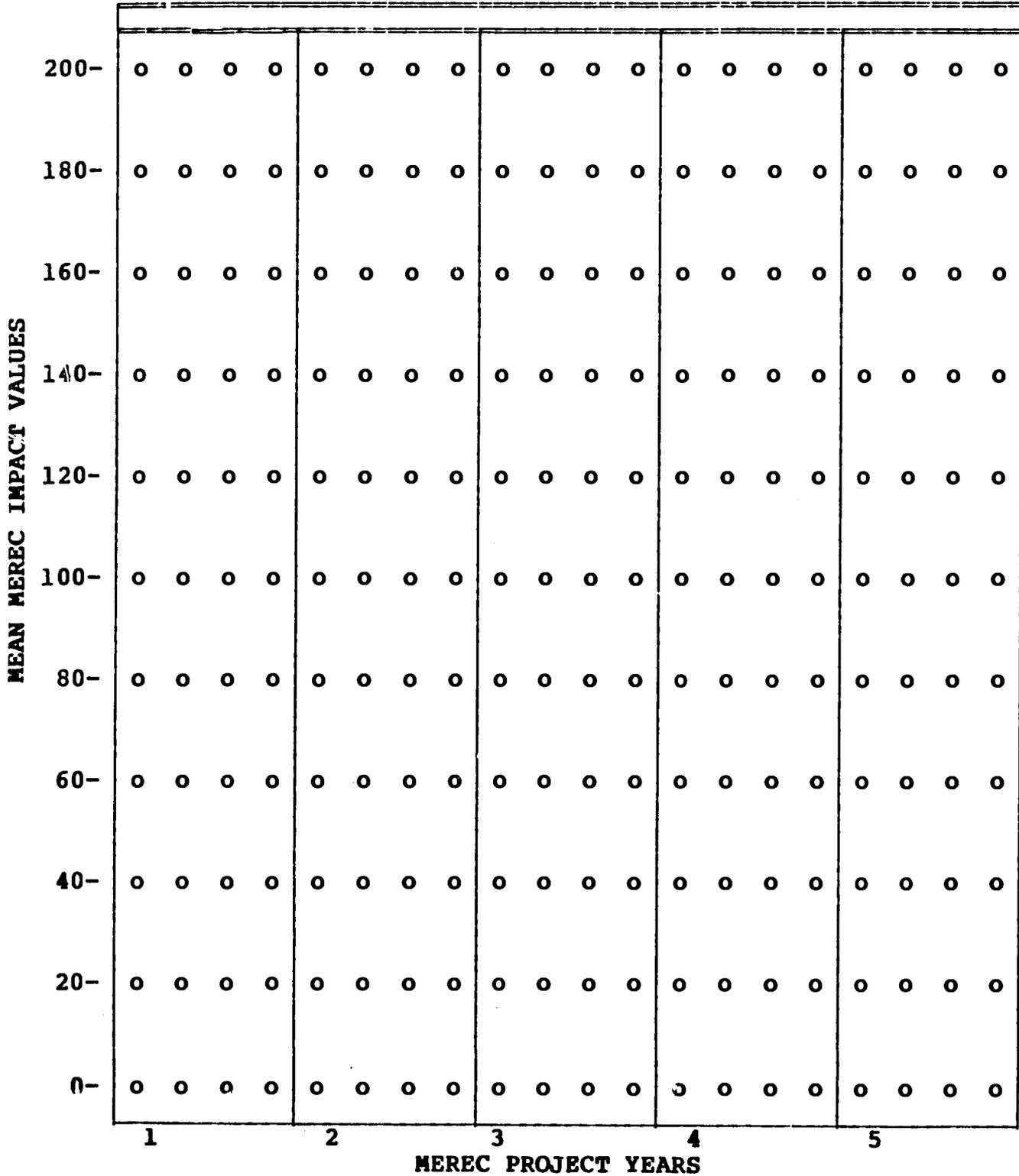


FIGURE VI-6

MEREC SECTOR OVERVIEW FORM

ELECTRICITY: Financial Indicator		
<b>SECTOR PURPOSE:</b> Minimize Kilowatt Wastage and Losses Due to Pilferage, Leakage, and Meter Malfunctions		
<b>COORDINATING SECTORS:</b> Transportation, Urban Farming, Housing, Land Use, and Education and Training		
<b>SECTOR PRIMARY OBJECTIVE:</b> Decrease Number of Unpaid Kilowatt Hours from 520, 770, to 475,444		
<b>M E R E C S U B - P R O J E C T S</b>		
<b><u>SUB-PROJECT #1</u></b>	<b><u>SUB-PROJECT #2</u></b>	<b><u>SUB-PROJECT #3</u></b>
<b>TITLE:</b> Use of Calibration Equipment to Minimize Kilowatt Losses  <b>PRIMARY OBJECTIVE:</b> Upgrade Efficiency of Electricity Delivery System to Reduce Number of Unpaid Kilowatt Hours  <b>INDICATOR:</b> Percent Reduction in Uncollected Revenues (Pesos) Per Month   <b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b> To be Developed by Tacloban Officials in Coordination with MEREC Representatives	<b>TITLE:</b>   <b>PRIMARY OBJECTIVE:</b>   <b>INDICATOR:</b>   <b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b>	<b>TITLE:</b>   <b>PRIMARY OBJECTIVE:</b>   <b>INDICATOR:</b>   <b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b>

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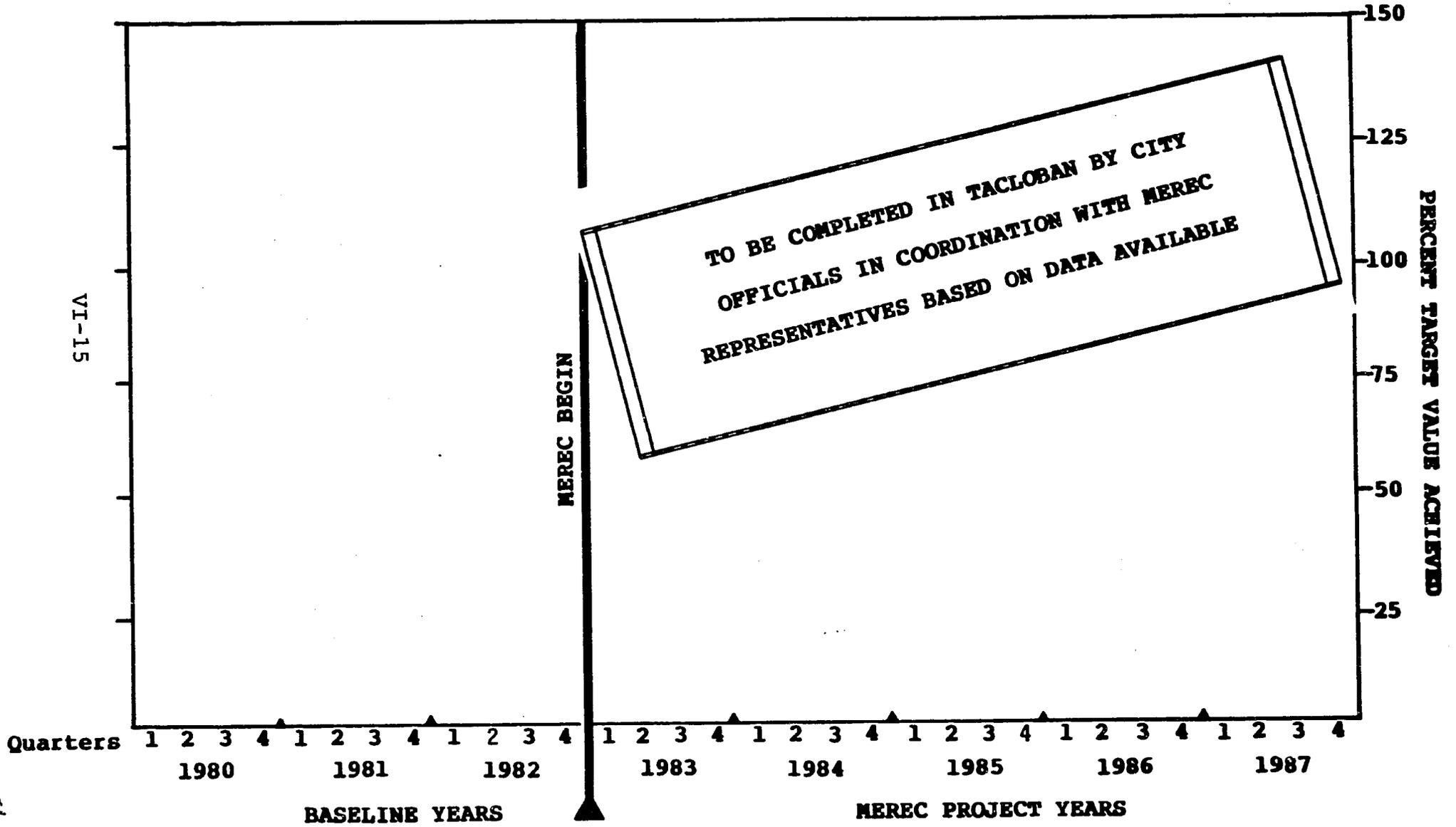
**TABLE VI-4**

**MEREC SUB-PROJECT OVERVIEW FORM**

1	<b><u>SECTOR:</u></b> Electricity: Financial Indicator
2	<b><u>SUB-PROJECT TITLE:</u></b> Revamp Lines and Meters
3	<b><u>RESPONSIBLE OFFICIAL:</u></b> Engineer and General Manager: Evelito Elento
4	<b><u>PRIMARY PURPOSE:</u></b> Reduce Kilowatt Losses as a Result of Pilferage, Leakage, and Meter Malfunctions
5	<b><u>MEASUREMENT INDICATOR:</u></b> Increase Revenues in Pesos Per Month Per Million Kilowatts Purchased
6	<b><u>BEGIN BASELINE VALUE (BBV) OF INDICATOR: BBV =</u></b> To be Developed by LEYECO II Officials in Coordination With MEREC Representatives
7	<b><u>MEREC BEGIN VALUE (MBV) OF INDICATOR: MBV =</u></b> To be Developed by LEYECO II Officials in Coordination With MEREC Representatives
8	<b><u>DATA COLLECTION SOURCE:</u></b> LEYECO II Officials and Records
9	<b><u>DATA COLLECTION METHOD:</u></b> Monthly Revenues Plus Kilowatt Usage Totals
10	<b><u>PROJECTED TARGET INDICATOR VALUE (TIV): TIV =</u></b> To be Developed by LEYECO II Officials in Coordination With MEREC Representatives
11	<b><u>PROJECT APPROACH:</u></b>  <ul style="list-style-type: none"> <li>a. Purchase Kilowatt Hour Meter Calibration Equipment</li> <li>b. Conduct Calibration Survey</li> <li>c. Correct Pilferage, Leakage and Meter Malfunctions</li> <li>d. Calculate Changes in Revenues Per Month Per Million Kilowatts Distributed in Tacloban City</li> </ul>

FIGURE VI-7

MEREC IMPACT INDICATOR DEFINITION CHART  
TACLOBAN CITY



**TABLE VI-5**

**MEREC INDICATOR DATA COLLECTION SUMMARY FORM**

<b>SECTOR:</b> ELECTRICITY	<b>SUB-PROJECT INDICATOR:</b> Percent Reduction in Uncollected Revenues (Pesos) Per Month
<b><u>MEASUREMENT METHOD:</u></b> Data Required to Complete This Form Not Available to SES. To be Completed by Tacloban Officials in Coordination with MEREC Representatives	
<b><u>FREQUENCY OF DATA PICK-UP:</u></b>	
<b><u>LOCATION(S):</u></b>	
<b><u>DATA ORGANIZATION:</u></b>	
<b><u>DATA COMPUTATION:</u></b>	

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TABLE VI-6(a)

**NEREC INDICATOR ACHIEVEMENT REGISTER**

1983 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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TABLE VI-6(b)

NEREC INDICATOR ACHIEVEMENT REGISTER

1984 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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51

TABLE VI-6(c)

NEREC INDICATOR ACHIEVEMENT REGISTER

1985 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

VI-IA

69

**TABLE VI-6 (d)**

**NEREC INDICATOR ACHIEVEMENT REGISTER**

1986 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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61

**TABLE VI-6(e)**

**NEREC INDICATOR ACHIEVEMENT REGISTER**

1987 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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FIGURE VI-8

MEREC SUB-PROJECT IMPACT VALUE PROFILE

SUB-PROJECT TITLE(S) :

INDICATOR(S) MEASURED :

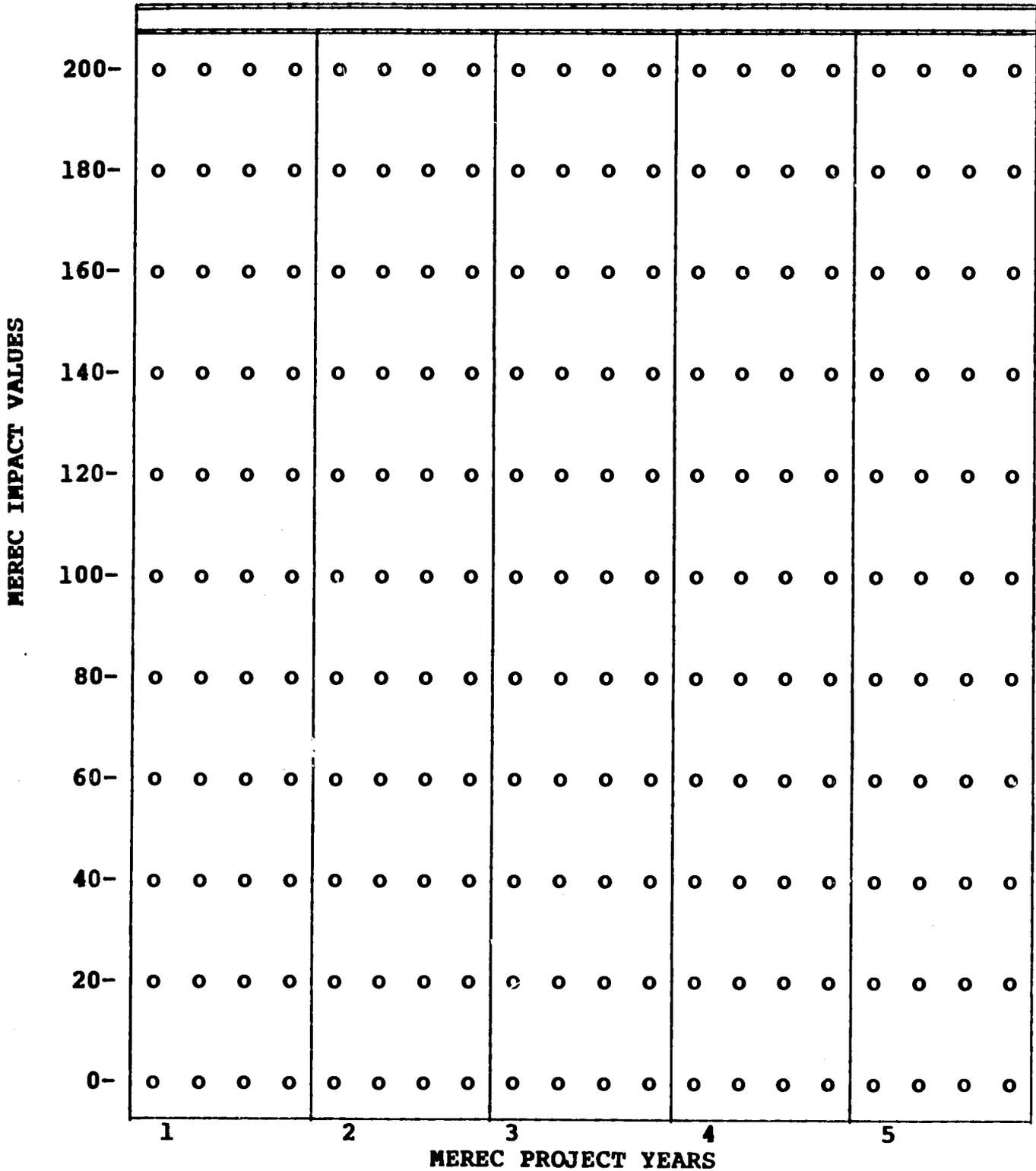
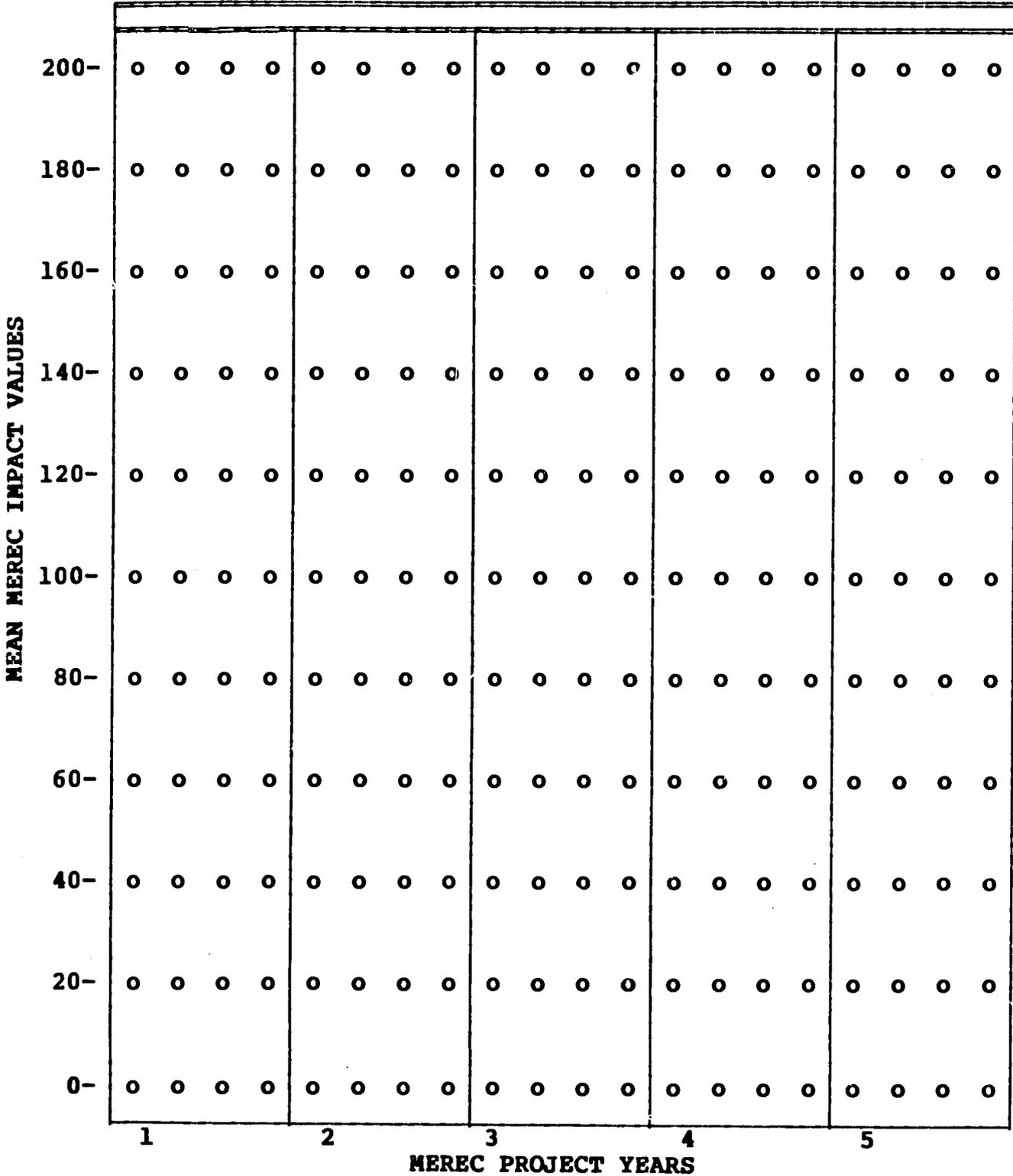


FIGURE VI-9

MEREC RESOURCE INDICATOR SUMMARY VALUE PROFILE FORM

RESOURCE(S) :

INDICATOR(S) MEASURED:



**FIGURE VI-10**

**MEREC SECTOR OVERVIEW FORM**

<p><b>ELECTRICITY:</b> Service Indicator</p>		
<p><b>SECTOR PURPOSE:</b>                  Improve Efficiency of Distribution of Electric Power (Kilowatt Hours) to Consumer Units</p>		
<p><b>COORDINATING SECTORS:</b>                  Transportation, Urban Farming, Housing, Land Use, and Education and Training</p>		
<p><b>SECTOR PRIMARY OBJECTIVE:</b></p>		
<p><b>M E R E C   S U B - P R O J E C T S</b></p>		
<p><b><u>SUB-PROJECT #1</u></b></p>	<p><b><u>SUB-PROJECT #2</u></b></p>	<p><b><u>SUB-PROJECT #3</u></b></p>
<p><b>TITLE:</b>                  Use of Calibration Equipment to Lessen Kilowatt Losses</p>	<p><b>TITLE:</b></p>	<p><b>TITLE:</b></p>
<p><b>PRIMARY OBJECTIVE:</b>                  Increase Efficiency of Electricity Delivery System in Terms of Kilowatt Hours</p>	<p><b>PRIMARY OBJECTIVE:</b></p>	<p><b>PRIMARY OBJECTIVE:</b></p>
<p><b>INDICATOR:</b>                  Mean Kilowatts Per Peso Per Consumer Unit</p>	<p><b>INDICATOR:</b></p>	<p><b>INDICATOR:</b></p>
<p><b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b>                  To be Developed by LEYECO II Officials in Coordination with TVA</p>	<p><b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b></p>	<p><b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b></p>

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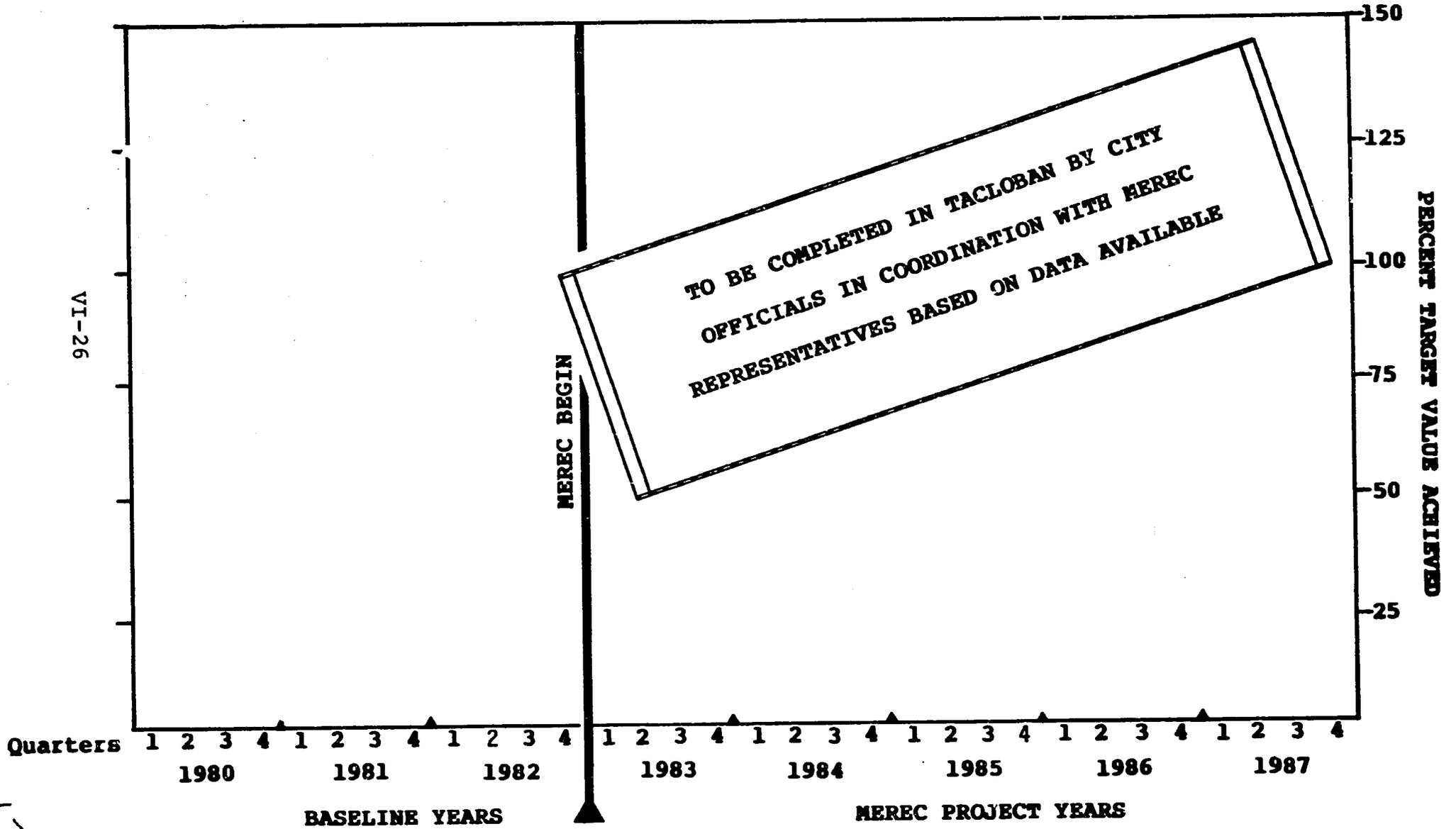
**TABLE VI-7**

**MEREC SUB-PROJECT OVERVIEW FORM**

1	<b>SECTOR:</b> Electricity: Service Indicator
2	<b>SUB-PROJECT TITLE:</b> Revamp Lines and Meters
3	<b>RESPONSIBLE OFFICIAL:</b> Engineer and General Manager: Evelito Elento
4	<b>PRIMARY PURPOSE:</b> Reduce Kilowatt Losses as a Result of Pilferage, Leakage, and Meter Malfunctions
5	<b>MEASUREMENT INDICATOR:</b> Mean Kilowatts Per Peso Per Consumer Unit; Consumer Units Are Buildings With Meters (Approximately 12,000)
6	<b>BEGIN BASELINE VALUE (BBV) OF INDICATOR: BBV =</b> To be Developed by LEYECO II Officials in Coordination With MEREC Representatives
7	<b>MEREC BEGIN VALUE (MBV) OF INDICATOR: MBV =</b> To be Developed by LEYECO II Officials in Coordination With MEREC Representatives
8	<b>DATA COLLECTION SOURCE:</b> LEYECO II Officials and Records
9	<b>DATA COLLECTION METHOD:</b> To be Developed by LEYECO II Officials in Coordination With MEREC Representatives
10	<b>PROJECTED TARGET INDICATOR VALUE (TIV): TIV =</b> To be Developed by LEYECO II Officials in Coordination With MEREC Representatives
11	<b>PROJECT APPROACH:</b>  <ul style="list-style-type: none"> <li>a. Purchase Kilowatt Hour Meter Calibration Equipment</li> <li>b. Conduct Calibration Survey</li> <li>c. Based on Savings, Shift Costs to Consumer Units Per Kilowatt Hour or Provide Other Services Based on Improved System Efficiency</li> </ul>

FIGURE VI-11

MEREC IMPACT INDICATOR DEFINITION CHART  
TACLOBAN CITY



**TABLE VI-8**

**MEREC INDICATOR DATA COLLECTION SUMMARY FORM**

<b>SECTOR:</b> ELECTRICITY	<b>SUB-PROJECT INDICATOR:</b> Mean Kilowatts Per Peso Per Consumer Unit
<b><u>MEASUREMENT METHOD:</u></b> Data Required to Complete This Form Not Available to SES. To be Completed by Tacloban Officials in Coordination with MEREC Representatives	
<b><u>FREQUENCY OF DATA PICK-UP:</u></b>	
<b><u>LOCATION(S):</u></b>	
<b><u>DATA ORGANIZATION:</u></b>	
<b><u>DATA COMPUTATION:</u></b>	

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**TABLE VI-9(a)**

**NEREC INDICATOR ACHIEVEMENT REGISTER**

1983 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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69

**TABLE VI-9(b)**

**MEREC INDICATOR ACHIEVEMENT REGISTER**

1984 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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TABLE VI-9(c)

MEREC INDICATOR ACHIEVEMENT REGISTER

1985 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

VI-30

16

TABLE VI-9(d)

**MREB INDICATOR ACHIEVEMENT REGISTER**

1986 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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72

**TABLE VI-9(e)**

**NEREC INDICATOR ACHIEVEMENT REGISTER**

1987 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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FIGURE VI-12

MEREC SUB-PROJECT IMPACT VALUE PROFILE

SUB-PROJECT TITLE(S):

INDICATOR(S) MEASURED:

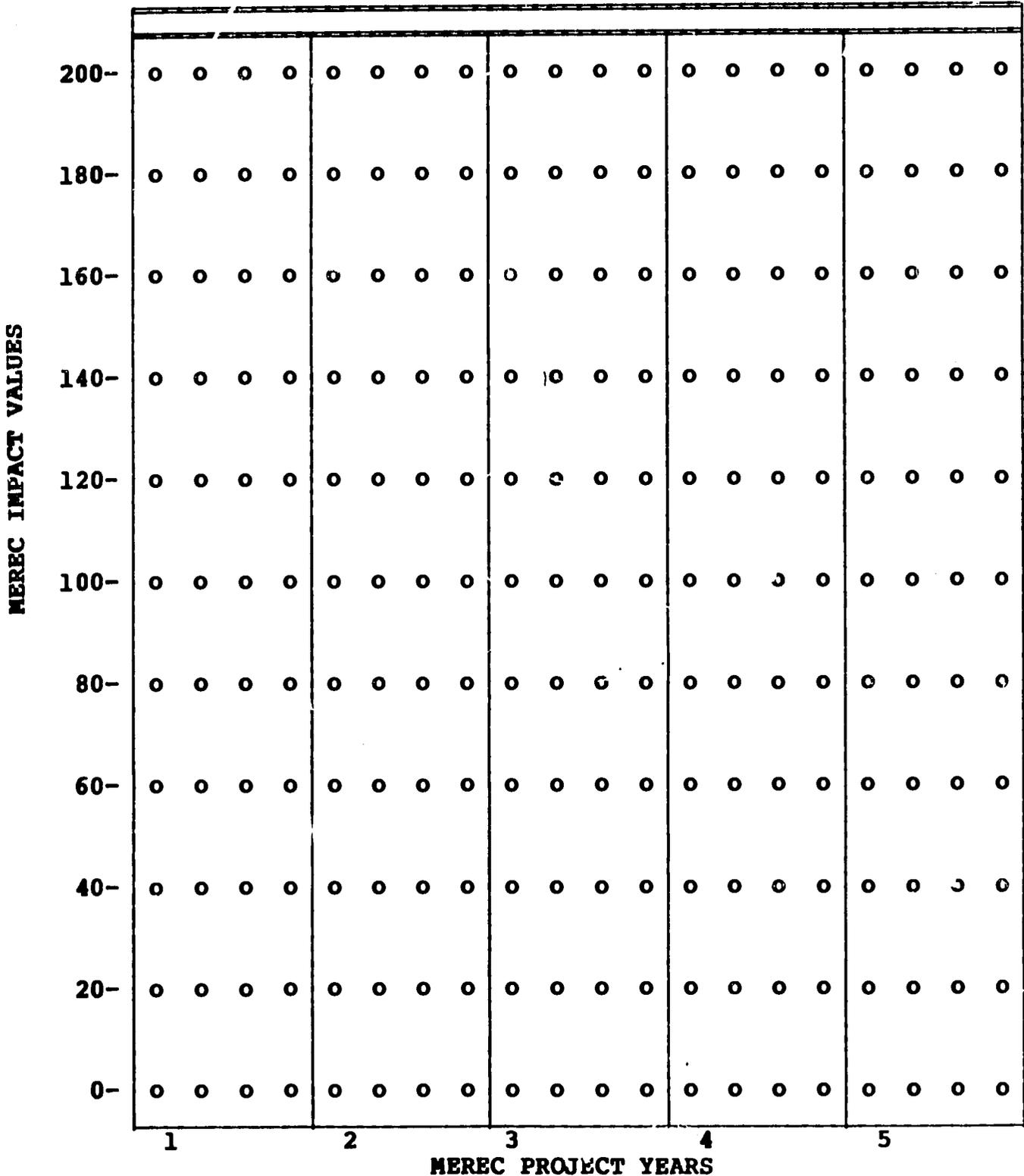
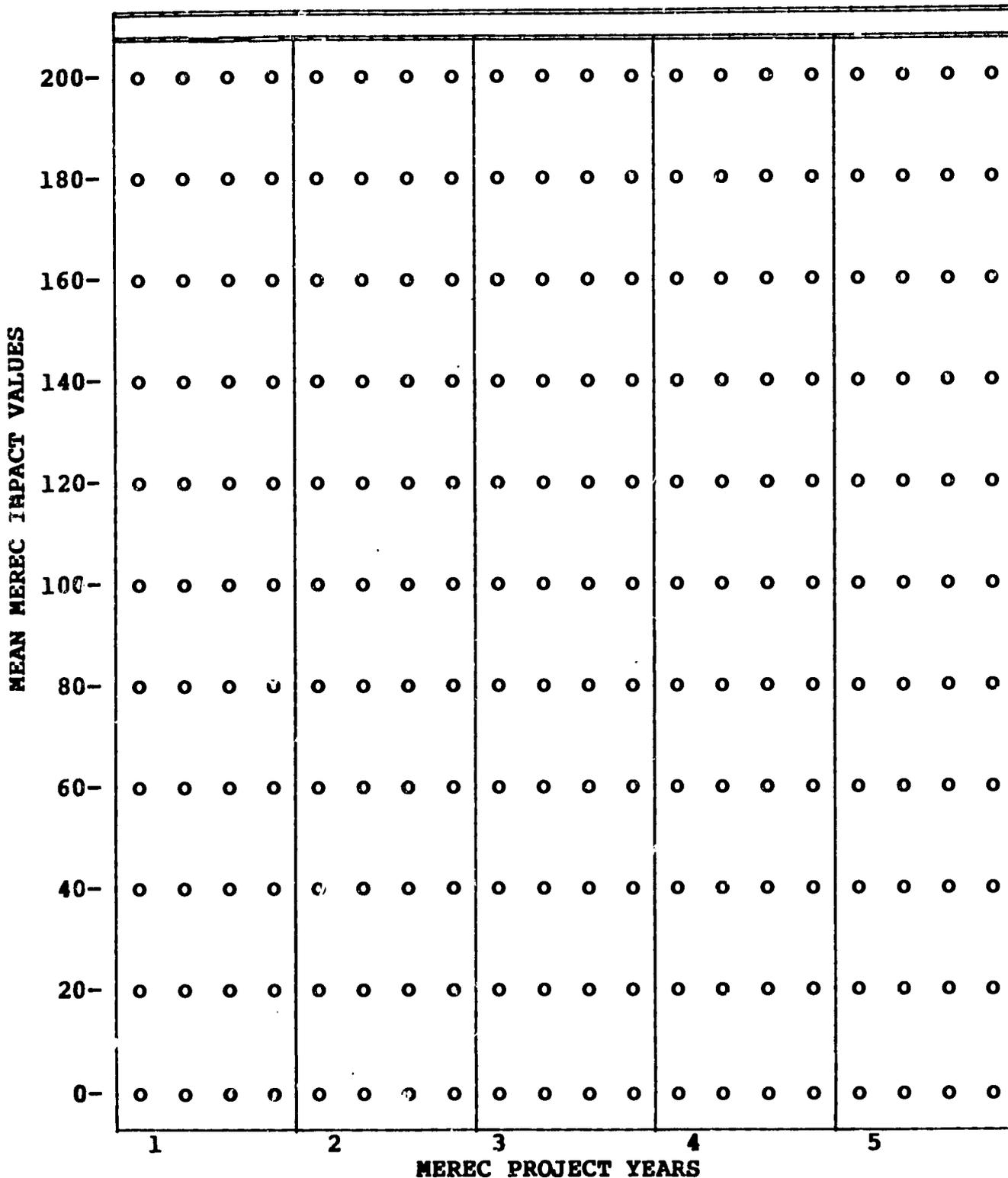


FIGURE VI-13

MEREC RESOURCE INDICATOR SUMMARY VALUE PROFILE FORM

RESOURCE(S) :

INDICATOR(S) MEASURED:



**FIGURE V-I4**

**MEREC SECTOR OVERVIEW FORM**

<b>ELECTRICITY:</b> Energy Indicator		
<b>SECTOR PURPOSE:</b> To Relate Kilowatt Savings to Reduction in Brownouts		
<b>COORDINATING SECTORS:</b> Transportation, Urban Farming, Housing, Land Use, and Education and Training		
<b>SECTOR PRIMARY OBJECTIVE:</b> Decrease Loss of Electricity in Kilowatt Hours		
<b>M E R E C   S U B - P R O J E C T S</b>		
<p align="center"><b><u>SUB-PROJECT #1</u></b></p> <p><b>TITLE:</b> Use of Calibration Equipment to Minimize Kilowatt Losses</p> <p><b>PRIMARY OBJECTIVE:</b> Relate Savings in Kilowatts to Reduction in Brownouts</p> <p><b>INDICATOR:</b> Number of Brownout Hours Per Month</p> <p><b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b> To be Developed by Tacloban Officials in Coordination with MEREC Representatives</p>	<p align="center"><b><u>SUB-PROJECT #2</u></b></p> <p><b>TITLE:</b></p> <p><b>PRIMARY OBJECTIVE:</b></p> <p><b>INDICATOR:</b></p> <p><b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b></p>	<p align="center"><b><u>SUB-PROJECT #3</u></b></p> <p><b>TITLE:</b></p> <p><b>PRIMARY OBJECTIVE:</b></p> <p><b>INDICATOR:</b></p> <p><b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b></p>

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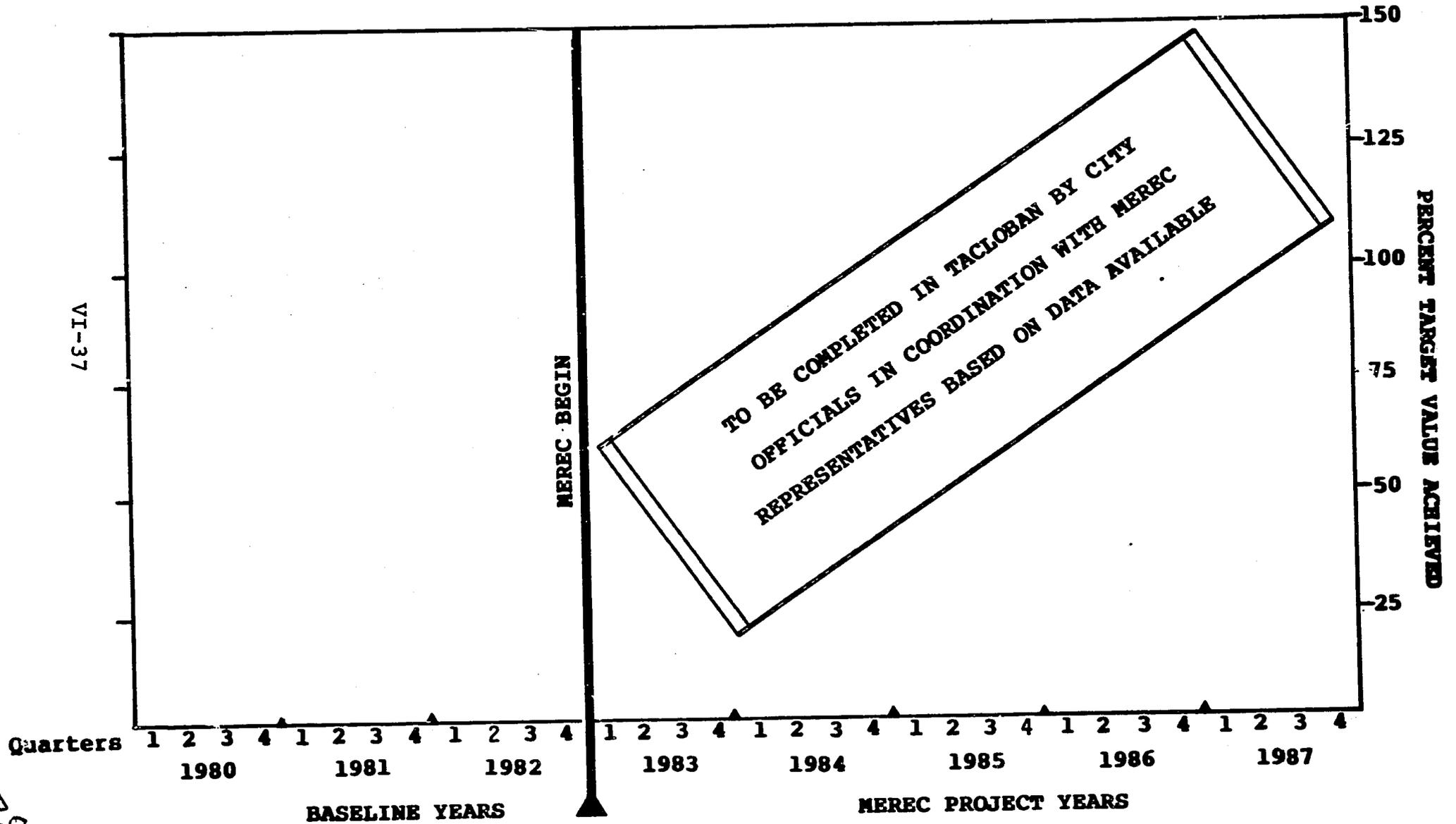
**TABLE VI-10**

**MEREC SUB-PROJECT OVERVIEW FORM**

1	<p><b><u>SECTOR:</u></b> Electricity: Energy Indicator</p>
2	<p><b><u>SUB-PROJECT TITLE:</u></b> Revamp Lines and Meters</p>
3	<p><b><u>RESPONSIBLE OFFICIAL:</u></b> Engineer and General Manager: Evelito Elento</p>
4	<p><b><u>PRIMARY PURPOSE:</u></b> To Relate Reduction in Pilferage, Leakage, and Meter Malfunctions to Reduction in Brownouts</p>
5	<p><b><u>MEASUREMENT INDICATOR:</u></b> Number of Brownout Hours Per Month</p>
6	<p><b><u>BEGIN BASELINE VALUE (BBV) OF INDICATOR: BBV =</u></b> To be Developed by LEYECO II Officials in Coordination With MEREC Representatives</p>
7	<p><b><u>MEREC BEGIN VALUE (MBV) OF INDICATOR: MBV =</u></b> To be Developed by LEYECO II Officials in Coordination With MEREC Representatives</p>
8	<p><b><u>DATA COLLECTION SOURCE:</u></b> LEYECO II Officials and Records</p>
9	<p><b><u>DATA COLLECTION METHOD:</u></b> LEYECO II Brownout Records</p>
10	<p><b><u>PROJECTED TARGET INDICATOR VALUE (TIV): TIV =</u></b> To be Developed by LEYECO II Officials in Coordination With MEREC Representatives</p>
11	<p><b><u>PROJECT APPROACH:</u></b></p> <ul style="list-style-type: none"> <li>a. Purchase Kilowatt Hour Meter Calibration Equipment</li> <li>b. Conduct Calibration Survey</li> <li>c. Correct Pilferage, Leakage, and Meter Malfunctions</li> <li>d. Obtain Brownout Intervals in Hours Per Month From LEYECO II Records</li> </ul>

FIGURE VI-15

MEREC IMPACT INDICATOR DEFINITION CHART  
TACLOBAN CITY



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**TABLE VI-11**

**MEREC INDICATOR DATA COLLECTION SUMMARY FORM**

<b>SECTOR:</b> ELECTRICITY	<b>SUB-PROJECT INDICATOR:</b> Number of Brownout Hours Per Month
<b><u>MEASUREMENT METHOD:</u></b> Data Required to Complete This Form Not Available to SES. To be Completed by Tacloban Officials in Coordination with MEREC Representatives	
<b><u>FREQUENCY OF DATA PICK-UP:</u></b>	
<b><u>LOCATION(S):</u></b>	
<b><u>DATA ORGANIZATION:</u></b>	
<b><u>DATA COMPUTATION:</u></b>	

VI-38

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**TABLE VI-12(a)**

**NEREC INDICATOR ACHIEVEMENT REGISTER**

1983 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

VI-39

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TABLE VI-12(b)

MEREC INDICATOR ACHIEVEMENT REGISTER

1984 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

VI-40

18

**TABLE VI-12(c)**

**NEREC INDICATOR ACHIEVEMENT REGISTER**

1985 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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TABLE VI-12(d)

NEREC INDICATOR ACHIEVEMENT REGISTER

1986 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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83

TABLE VI-12(e)

NSREC INDICATOR ACHIEVEMENT REGISTER

1987 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

VI-43

44

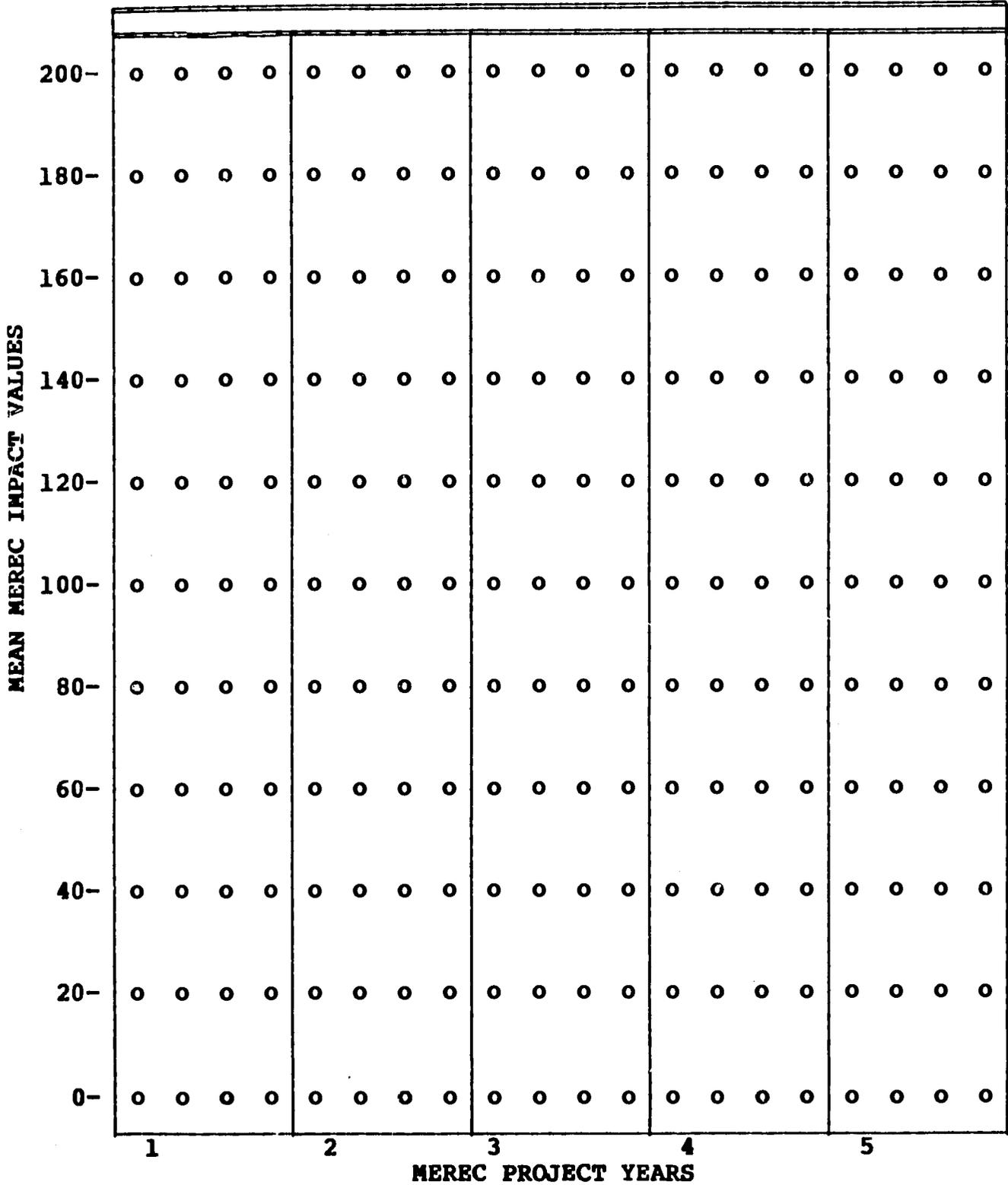


FIGURE VI-17

MEREC RESOURCE INDICATOR SUMMARY VALUE PROFILE FORM

RESOURCE(S):

INDICATOR(S) MEASURED:



## **CAVEATS AND INTERPRETATIONS: ELECTRICITY SECTOR**

### **Resource Indicator: Reduction in kilowatt wastage:**

The primary thrust of the Electricity Sector sub-project is to reduce wastage of kilowatts by:

- Assuring that all meters are properly calibrated.
- Assuring that all residences, production facilities and businesses have meters that register total kilowatt usage.

The amount of reduction in leakage of electricity will be affected by such factors as:

- Adequacy of calibration instruments.
- Whether all faulty meters are located and replaced.
- Degree to which all illegal usage is detected and corrected.
- Number and kinds of meter malfunctions that take place during the MEREC project years.
- Number and kind of illegal leaks that occur during the project.
- Number and type of accidental and undetected electrical leaks that occur.

### **Financial Indicator:**

Assuming that the gap between power purchased by LEYECO II and the power paid for by consumers is appreciably narrowed, then there is the possibility that cost per kilowatt might be reduced in pesos. Such a reduction in kilowatt costs might result in increased use of appliances by typical households thus gradually increasing the overall kilowatt load on the LEYECO system. Hence, reduction in cost per kilowatt could increase overall revenues of the system by:

- Minimizing power consumed but not paid for.
- Eliminating leaks (short and partially shorted circuits).
- Providing incentives for purchases of appliances, thus increasing total kilowatt consumption.

### **Service Indicator:**

Benefits for consumers directly by eliminating leaks and pilferage are:

- Reduction in costs per kilowatt to LEYECO II based on improved services and/or reduced costs per kilowatt.

- Possible increases in use of appliances at reduced rate per kilowatt.
- Possible extension of services by LEYECO II based on increased revenue through reduction in leaks and pilferage.

Energy Indicator:

Reduction in load on system through minimization of leaks and pilferage should reduce number of brownout hours per month as system power loads would be much more predictable. As a result, LEYECO would be in a better position to limit power usage based on supply.

# CHAPTER VII

**CHAPTER VII**

**SECTOR:** Land Use

**SUB-PROJECT:** Land Use Plan Revision

**FIGURE VII-1(a)**

**SECTOR COMPLETION REQUIREMENTS FORM**

**A. COORDINATION TASKS REMAINING**

1. MEREC Sector Overview Form
2. MEREC Sub-Project Overview Form
3. MEREC Impact Indicator Definition Chart
4. MEREC Indicator Data Collection Summary Form
5. MEREC Indicator Achievement Register

* Submitted	To be ** Completed
X	
X	
X	
X	

**B. COMPLETION NOTES**

- A-1 Information Submitted
- A-2 Information Submitted
- A-3 Information Submitted
- A-4 Information Submitted
- A-5 Information Submitted

\* Submitted: Tacloban officials review information with MEREC representatives and make changes based on best available Tacloban information consistent with MEREC project objectives.

\*\* To be Completed: Review existing information in Tacloban and working with MEREC representatives supply missing data and/or entries as required to meet MEREC objectives.

## CHAPTER VII

**SECTOR:** Land Use

**SUB-PROJECT:** Urban Farming

### FIGURE VII-1(b)

#### SECTOR COMPLETION REQUIREMENTS FORM

**A. COORDINATION TASKS REMAINING**

1. MEREC Sector Overview Form
2. MEREC Sub-Project Overview Form
3. MEREC Impact Indicator Definition Chart
4. MEREC Indicator Data Collection Summary Form
5. MEREC Indicator Achievement Register

	* Submitted	To be ** Completed
1. MEREC Sector Overview Form	X	
2. MEREC Sub-Project Overview Form	X	
3. MEREC Impact Indicator Definition Chart	X	
4. MEREC Indicator Data Collection Summary Form	X	
5. MEREC Indicator Achievement Register	X	

**B. COMPLETION NOTES**

- A-1 Information submitted for vegetable and tree production as well as livestock
- A-2 Information submitted for vegetable and tree production as well as livestock
- A-3 Information submitted for vegetable and tree production as well as livestock
- A-4 Information submitted for vegetable and tree production as well as livestock
- A-5 Information submitted for vegetable and tree production as well as livestock

\* Submitted: Tacloban officials review information with MEREC representatives and make changes based on best available Tacloban information consistent with MEREC project objectives.

\*\* To be Completed: Review existing information in Tacloban and working with MEREC representatives supply missing data and/or entries as required to meet MEREC objectives.

**FIGURE VII-2**

**MEREC SECTOR OVERVIEW FORM**

<b>LAND USE:</b> Resource Indicator		
<b>SECTOR PURPOSE:</b> Plan for More Efficient Use of City Land for All Purposes		
<b>COORDINATING SECTORS:</b> Water and Sewer, Transportation, Waste Management, Urban Farming and Education and Training		
<b>SECTOR PRIMARY OBJECTIVE:</b> Optimize Land Use and Development Through Use of a Coordinate Land Use Plan		
<b>MEREC SUB-PROJECTS</b>		
<p align="center"><b><u>SUB-PROJECT #1</u></b></p> <p><b>TITLE:</b> Land Use Plan Revision</p> <p><b>PRIMARY OBJECTIVE:</b> Optimize Land Use to Increase Land Values</p> <p><b>INDICATOR:</b> Market Value of Land in Pesos Per Square Meter</p> <p><b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b> To be Developed by Tacloban Officials in Coordination with MEREC Representatives</p>	<p align="center"><b><u>SUB-PROJECT #2</u></b></p> <p><b>TITLE:</b> URBAN FARMING</p> <p><b>PRIMARY OBJECTIVE:</b> Increase Farm Production in Idle Urban Land</p> <p><b>INDICATOR:</b> Increase Production in Kilograms Per 1,000 Square Meters</p> <p><b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b> To be Developed by Tacloban Officials in Coordination with MEREC Representatives</p>	<p align="center"><b><u>SUB-PROJECT #3</u></b></p> <p><b>TITLE:</b></p> <p><b>PRIMARY OBJECTIVE:</b></p> <p><b>INDICATOR:</b></p> <p><b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b></p>

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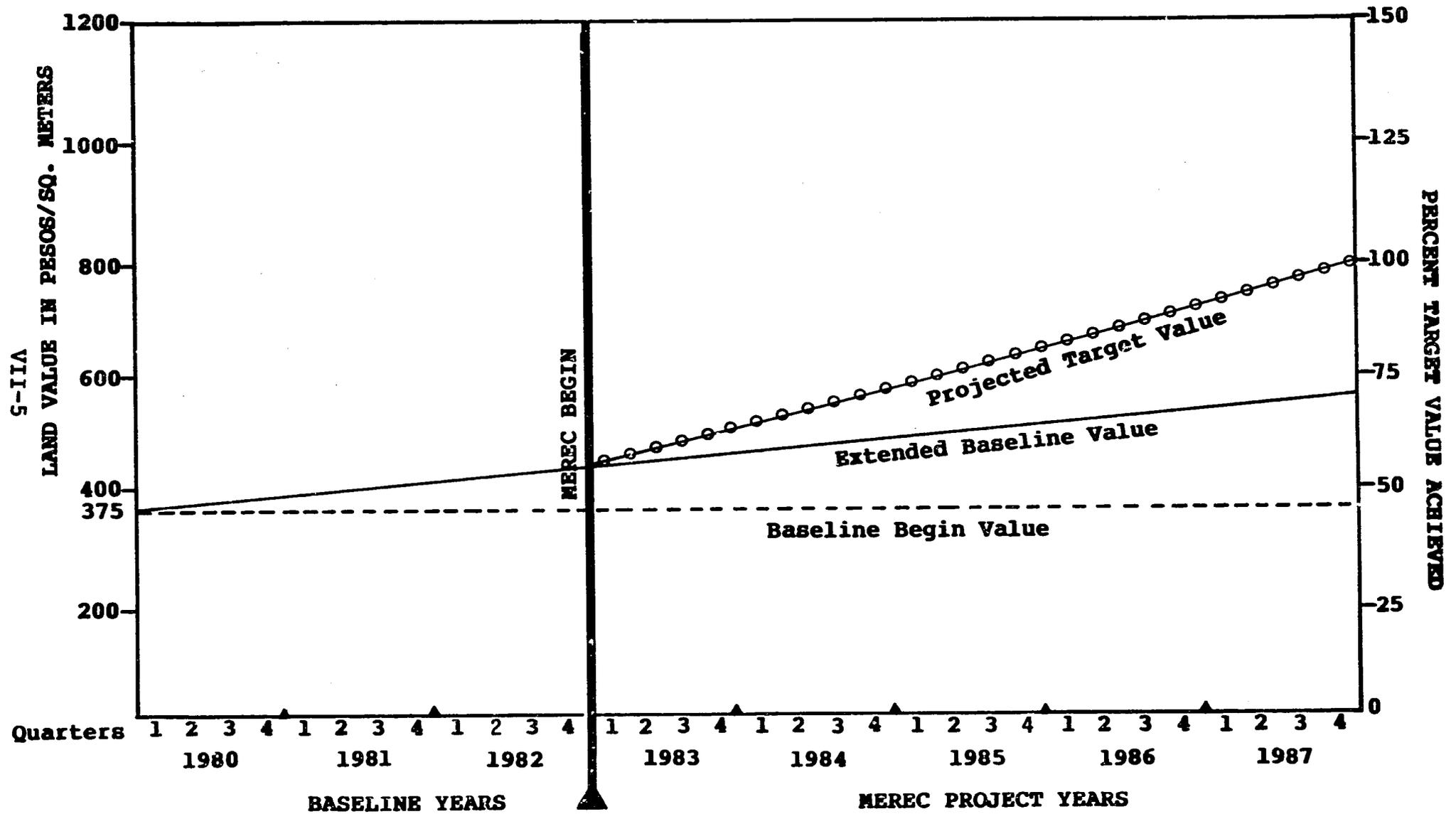
**TABLE VII-1**

**MEREC SUB-PROJECT OVERVIEW FORM**

1	<b><u>SECTOR:</u></b> Land Use: Resource Indicator
2	<b><u>SUB-PROJECT TITLE:</u></b> Land Use Plan
3	<b><u>RESPONSIBLE OFFICIAL:</u></b> Engineer and General Manager: Evelito Elento
4	<b><u>PRIMARY PURPOSE:</u></b> Improve Land Value in Tacloban City
5	<b><u>MEASUREMENT INDICATOR:</u></b> Market Value of Land in Pesos Per Square Meter
6	<b><u>BEGIN BASELINE VALUE (BBV) OF INDICATOR:</u></b> BBV = ₱375.00
7	<b><u>MEREC BEGIN VALUE (MBV) OF INDICATOR:</u></b> MBV = ₱450.00
8	<b><u>DATA COLLECTION SOURCE:</u></b> City Planning and Development Office
9	<b><u>DATA COLLECTION METHOD:</u></b> Monthly Summaries From City Planning and Development Office
10	<b><u>PROJECTED TARGET INDICATOR VALUE (TIV):</u></b> TIV = ₱800.00
11	<b><u>PROJECT APPROACH:</u></b>  a. Review and Update Framework Development and Comprehensive Development Plans Based on 1980 Socioeconomic Profile and MEREC:  (1) Review and Comment on FDP Goals and Objectives  (2) Initiate City Review and Update of FDP Goals and Objectives  (3) Review of 1970-1980 Changes in Socio-economic Data and Submit Draft Framework plan to CODS  (4) Accomplish City Review of Revised FDP  (5) Obtain Necessary Data to Provide Month by Month Value in Pesos Per Square Meter Throughout MEREC Project Period

FIGURE VII-3

MEREC IMPACT INDICATOR DEFINITION CHART  
TACLOBAN CITY  
LAND USE SECTOR



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**TABLE VII-2**

**MEREC INDICATOR DATA COLLECTION SUMMARY FORM**

<b>SECTOR:</b> LAND USE	<b>SUB-PROJECT INDICATOR:</b> Market Value of Land in Pesos Per Square Meter
<b><u>MEASUREMENT METHOD:</u></b> Obtain Data Routinely from City Planning and Development Office, Obtain Land Value in Pesos Per Square Meter in Such Categories as Residential, Commercial, Industrial, Recreational, and Institutional Areas.	
<b><u>FREQUENCY OF DATA PICK-UP:</u></b> To Be Coordinated With Tacloban Officials in Coordination With MEREC Representatives	
<b><u>LOCATION(S):</u></b> Data Collection Locations are City Planning and Development Office	
<b><u>DATA ORGANIZATION:</u></b> <ol style="list-style-type: none"><li>1. Use of MEREC Indicator Achievement Register Form (TABLE VII-3)</li><li>2. Enter in MEREC Sub-Project Impact Value Profile Quarterly (FIGURE VII-3)</li><li>3. Enter Quarterly in MEREC Resource Indicator Summary Value Profile Form in Mayor's Office (FIGURE VII-4)</li></ol>	
<b><u>DATA COMPUTATION:</u></b> <ol style="list-style-type: none"><li>1. Quarter Average of Monthly Results for Entry in MEREC Indicator Achievement Register Form (TABLE VII-3)</li><li>2. Annual Average Every Four Quarters for Entry in MEREC Indicator Achievement Register Form (TABLE VII-3)</li></ol>	

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TABLE VII-3(a)

MEREC INDICATOR ACHIEVEMENT REGISTER

1983 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	452.08		455.83					
2	Feb.	454.17		461.67					
3	March	456.25	19.12%		21.76%				
Q1									
4	April	458.33		473.33					
5	May	460.42		479.17					
6	June	462.50	20.58	485.00	25.88				
Q2									
7	July	464.58		490.83					
8	Aug.	466.67		496.67					
9	Sept.	468.75	22.06	502.50	30.00				
Q3									
10	Oct.	470.83		508.33					
11	Nov.	472.92		514.17					
12	Dec.	475.00	23.53	520.00	34.12				
Q4									
ANNUAL SUMMARY									

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TABLE VII-3(b)

## NEREC INDICATOR ACHIEVEMENT REGISTER

1984 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	477.08		525.83					
2	Feb.	479.17		531.67					
3	March	481.25	25.00%	537.50	38.24%				
Q1									
4	April	483.33		543.33					
5	May	485.42		549.17					
6	June	487.50	26.47	555.00	42.53				
Q2									
7	July	489.58		560.83					
8	Aug.	491.67		566.67					
9	Sept.	493.75	27.94	572.50	46.71				
Q3									
10	Oct.	495.83		578.33					
11	Nov.	497.92		584.17					
12	Dec.	500.00		590.00	50.59				
Q4									
ANNUAL SUMMARY									

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TABLE VII-3(c)

## MEREC INDICATOR ACHIEVEMENT REGISTER

1985 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	502.08		595.83					
2	Feb.	504.17		601.67					
3	March	506.25	30.88%	607.50	54.71%				
Q1									
4	April	508.33		613.33					
5	May	510.42		619.17					
6	June	512.50	32.35	625.00	58.82				
Q2									
7	July	514.58		630.83					
8	Aug.	516.67		636.67					
9	Sept.	518.75	33.82	642.50	62.94				
Q3									
10	Oct.	520.83		648.33					
11	Nov.	522.92		654.17					
12	Dec.	525.00	35.29	660.00	67.06				
Q4									
ANNUAL SUMMARY									

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TABLE VII-3(d)

## NEREC INDICATOR ACHIEVEMENT REGISTER

1986 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	527.08		665.83					
2	Feb.	529.17		671.67					
3	March	531.25	36.76%	677.50	71.18%				
Q1									
4	April	533.33		683.33					
5	May	535.42		689.17					
6	June	537.50	38.24	695.00	75.29				
Q2									
7	July	539.58		700.83					
8	Aug.	541.67		706.67					
9	Sept.	543.75	39.71	712.50	79.41				
Q3									
10	Oct.	545.83		718.33					
11	Nov.	547.92		724.17					
12	Dec.	550.00	41.18	730.00	83.53				
Q4									
ANNUAL SUMMARY									

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TABLE VII-3(e)

## NEREC INDICATOR ACHIEVEMENT REGISTER

1987 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	552.08		735.83					
2	Feb.	554.17		741.67					
3	March	556.25	42.65%	747.50	87.65%				
Q1									
4	April	558.33		753.33					
5	May	560.42		759.17					
6	June	562.50	44.12	765.00	91.76				
Q2									
7	July	564.58		770.83					
8	Aug.	567.67		776.67					
9	Sept.	568.75	45.59	782.50	95.88				
Q3									
10	Oct.	570.83		788.33					
11	Nov.	572.92		794.17					
12	Dec.	575.00	47.06	800.00	100.00				
Q4									
ANNUAL SUMMARY									

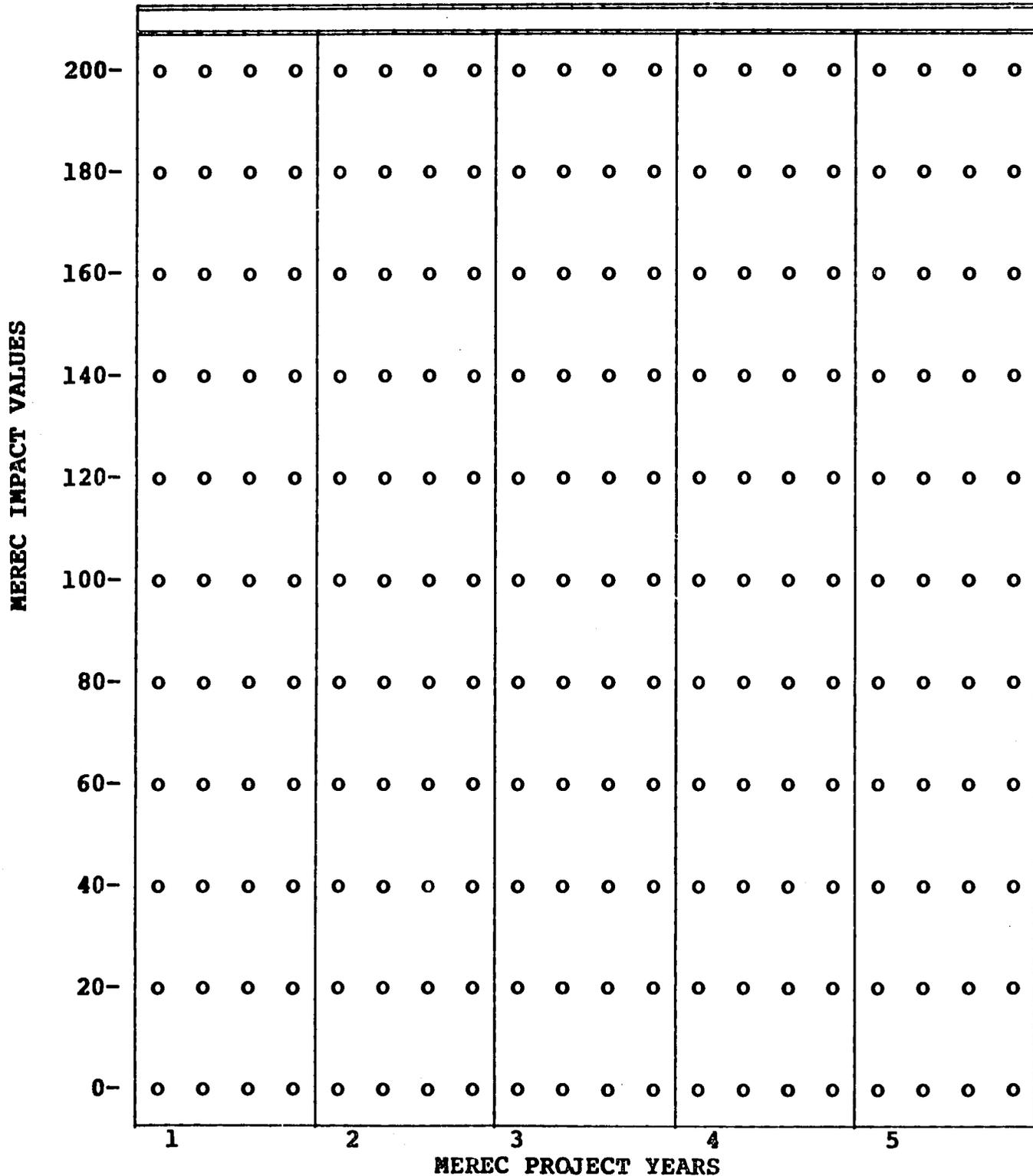
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FIGURE VII-4

MEREC SUB-PROJECT IMPACT VALUE PROFILE

SUB-PROJECT TITLE(S):

INDICATOR(S) MEASURED:



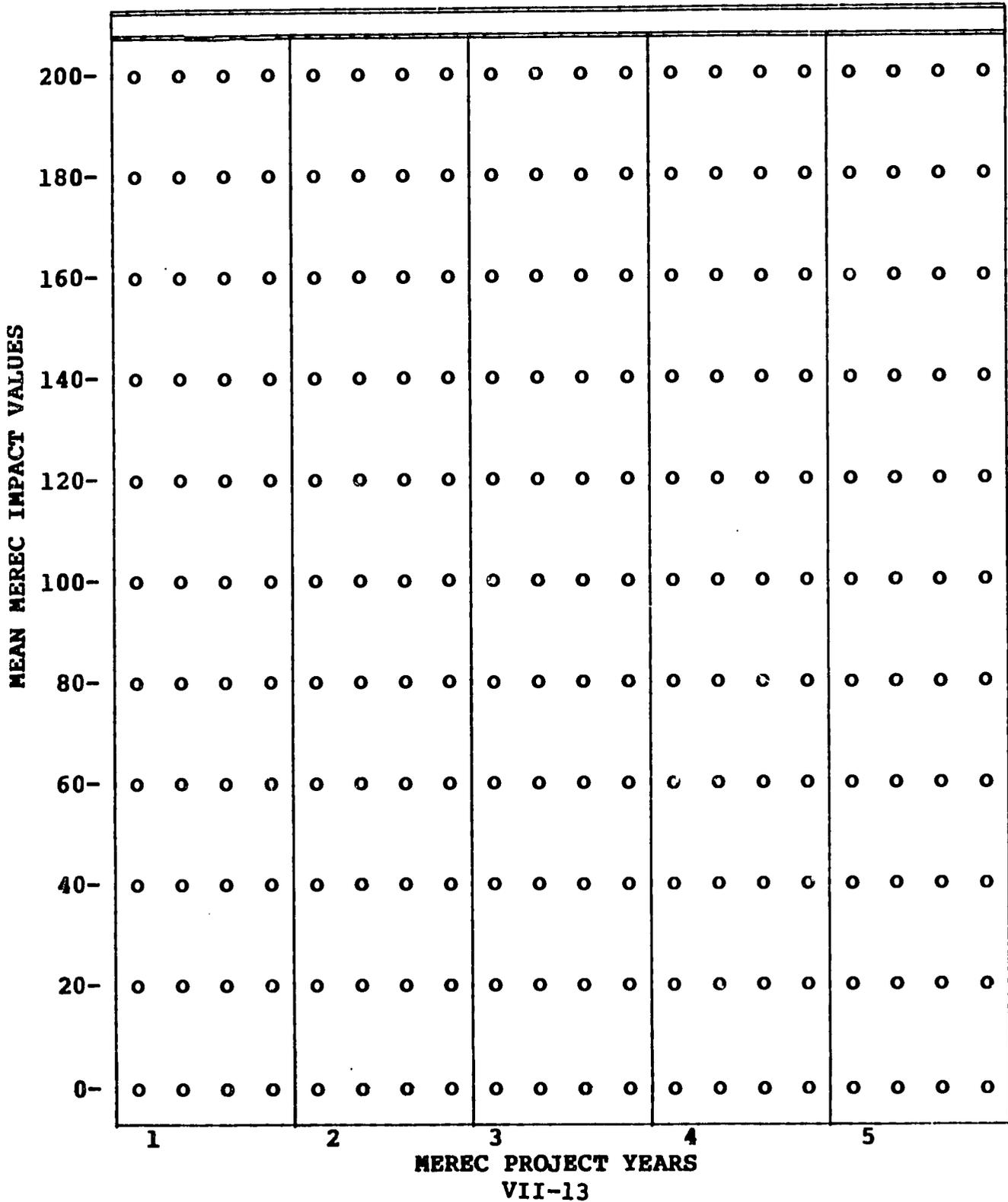
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**FIGURE VII-5**

**MEREC RESOURCE INDICATOR SUMMARY VALUE PROFILE FORM**

**RESOURCE(S) :**

**INDICATOR(S) MEASURED:**



## CAVEATS AND INTERPRETATIONS: LAND USE SECTOR

The market value of land per-square-meter varies based on many conditions besides drainage of water. For example, population density, traffic, type of neighborhood, growth patterns of the community, highway bulding, existing hectare values, speculation based on industrialization potential, water and air pollution hazards, etc., are important determinants of both price and value. Increases in hectare values following completion of the sub-project may well be influenced in part by the existence of MEREC, but certainly the influence of the project should be considered as partial, rather than causative. Conversely, if land values should fall, it is probable that overall downward pressures on land values would tend to offset MEREC's pressures which would tend to increase values through greater availability of roads, water, and improved traffic flow.

**TABLE VII-4**

**MEREC SUB-PROJECT OVERVIEW FORM**

1	<b>SECTOR:</b> Land Use: Resource Indicator
2	<b>SUB-PROJECT TITLE:</b> Urban Farming: Livestock Production
3	<b>RESPONSIBLE OFFICIAL:</b> City Agriculturist: Leopoldo M. Alvarez
4	<b>PRIMARY PURPOSE:</b> Increase Production in Idle Urban Land
5	<b>MEASUREMENT INDICATOR:</b> Kilograms Per 1,000 Square Meters
6	<b>BEGIN BASELINE VALUE (BBV) OF INDICATOR: BBV =</b> 20,000 Kilograms
7	<b>MEREC BEGIN VALUE (MBV) OF INDICATOR: MBV =</b> 30,000 Kilograms
8	<b>DATA COLLECTION SOURCE:</b> City Agriculturist Office
9	<b>DATA COLLECTION METHOD:</b> Monthly Summaries of Kilogram Production Per 1,000 Square Meters
10	<b>PROJECTED TARGET INDICATOR VALUE (TIV): TIV =</b> 67.0%
11	<b>PROJECT APPROACH:</b> <ul style="list-style-type: none"> <li>a. Information, Education and Training: 1) Purchase equipment (projector, camera, motorcycle and supplies) 2) Design barangay information and instruction program. 3) Barangay introduction to program with the aid of the carousel, camera, megaphone and motorcycle in the barangays.</li> <li>b. Site Identification and Design: 1) Listing of interested households and identification of ideal urban sites for backyard plots, animal production and ipil-ipil plantings. 2) Design of impact evaluation approach.</li> <li>c. Field Implementation: 1) Construction and fencing of backyard plots, including seed plots. 2) Distribution of seeds and commencement of demonstration activities. 3) Construction of poultry and swine houses. 4) Planting of ipil-ipil seedlings--continuous activity. 5) Spraying and fertilizing plots as needed--continuous activity. 6) Supervision, education and evaluation--continuous activity.</li> </ul> <p style="text-align: right;">(continued)</p>

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**TABLE VII-1 (Continued)**

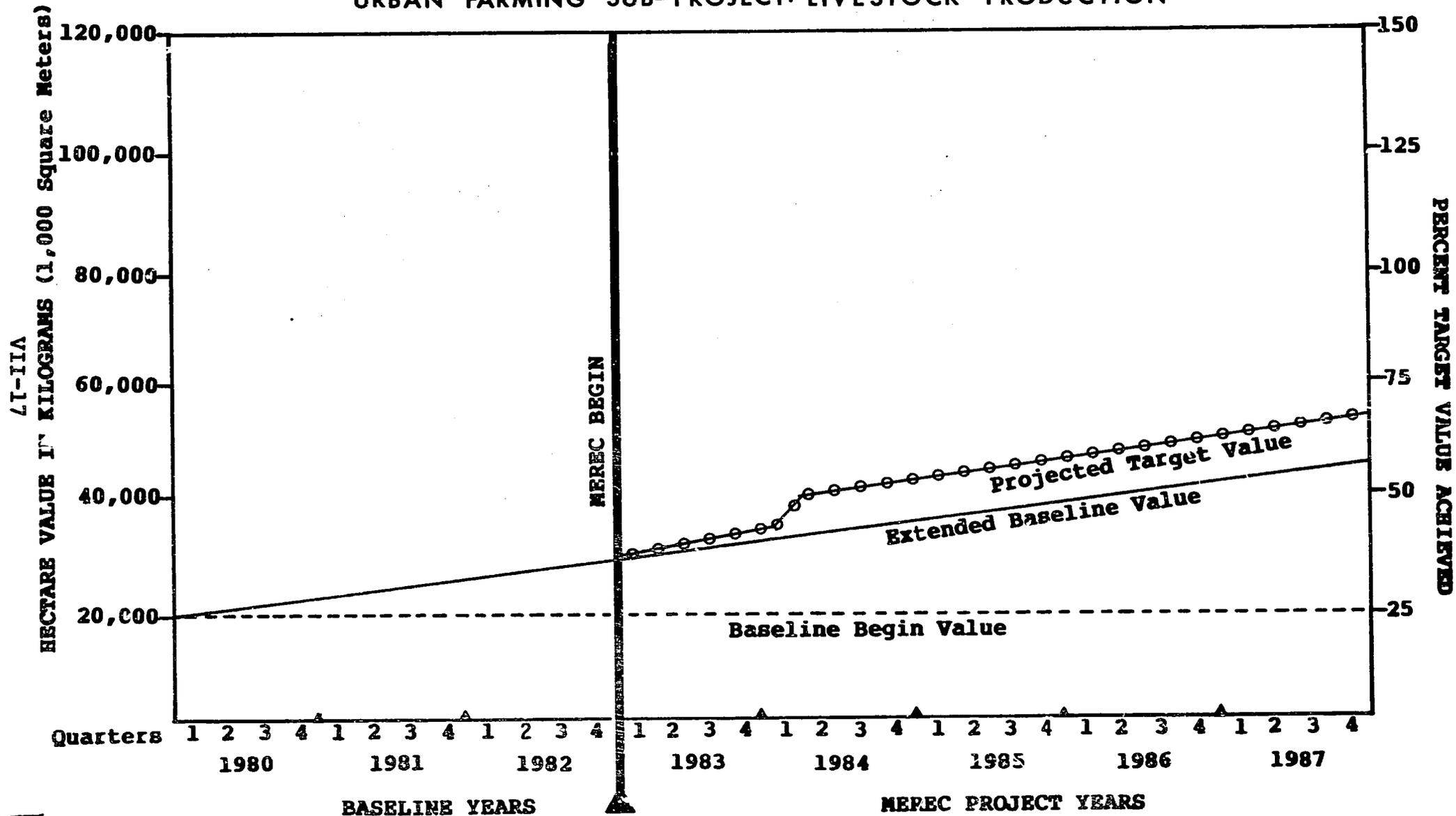
**PROJECT APPROACH: (Continued)**

- d. Plans and Programs Developed, based on evaluation results for improvement, expansion and continuation of program.
- e. Obtain Monthly Kilograms for 1,000 square meters and make entries as required by MEREC project.

FIGURE VII-6

MEREC IMPACT INDICATOR DEFINITION CHART  
TACLOBAN CITY  
LAND USE SECTOR

URBAN FARMING SUB-PROJECT: LIVESTOCK PRODUCTION



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**TABLE VII-5**

**MEREC INDICATOR DATA COLLECTION SUMMARY FORM**

<b>SECTOR:</b> LAND USE	<b>SUB-PROJECT INDICATOR:</b> Increase Livestock Production in Kilograms Per 1,000 Square Meters
<b><u>MEASUREMENT METHOD:</u></b> Obtain Data Routinely from City Agriculturist's Office as to Kilograms Per 1,000 Square Meters of Livestock Production in Barangays Involved in Project.	
<b><u>FREQUENCY OF DATA PICK-UP:</u></b> To be Coordinated with Tacloban Officials	
<b><u>LOCATION(S):</u></b> Barangays Involved in Project and City Agriculturist's Office	
<b><u>DATA ORGANIZATION:</u></b> <ol style="list-style-type: none"><li>1. Weigh Livestock in Barangays Monthly.</li><li>2. Enter in MEREC Indicator Achievement Register Form (TABLE VII-3)</li><li>3. Enter in MEREC Sub-Project Impact Value Profile Quarterly (FIGURE VII-3)</li><li>4. Enter Quarterly in MEREC Resource Indicator Summary Value Profile Form in Mayor's Office (FIGURE VII-4)</li></ol>	
<b><u>DATA COMPUTATION:</u></b> <ol style="list-style-type: none"><li>1. Quarterly Average of Monthly Results for Entry in MEREC Indicator Achievement Register Form (TABLE VII-3)</li><li>2. Annual Average Every Four Quarters for Entry in MEREC Indicator Achievement Register Form (TABLE VII-3)</li></ol>	

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TABLE VII-6(a)

MEREC INDICATOR ACHIEVEMENT REGISTER

1983 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	July	29,300	32.92%	28,800	31.86%				
2	Aug.	29,700	33.37	29,600	32.74				
3	Sept.	30,000	33.71	32,000	35.40				
Q1									
4	Oct.	30,300	32.93	32,800	32.67				
5	Nov.	30,700	33.37	33,600	33.47				
6	Dec.	31,000	33.70	34,000	33.86				
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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TABLE VII-6(b)

NEREC INDICATOR ACHIEVEMENT REGISTER

1984 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	31,300	32.95%	34,300	32.98%				
2	Feb.	31,700	33.37	34,700	33.37				
3	March	32,000	33.68	35,000	33.65				
Q1									
4	April	32,300	32.96	36,500	32.30				
5	May	32,700	33.37	37,500	33.19				
6	June	33,000	33.67	39,000	34.51				
Q2									
7	July	33,300	32.97	39,800	32.81				
8	Aug.	33,700	33.37	40,500	33.39				
9	Sept.	34,000	33.66	41,000	33.80				
Q3									
10	Oct.	34,300	32.98	41,300	33.04				
11	Nov.	34,700	33.37	41,700	33.36				
12	Dec.	35,000	33.65	42,000	33.60				
Q4									
ANNUAL SUMMARY									

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TABLE VII-6(c)

## NEREC INDICATOR ACHIEVEMENT REGISTER

1985 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	$IV = \frac{AAV}{PTV}$	Quarter
1	Jan.	35,300	33.00%	42,300	33.05%				
2	Feb.	35,700	33.36	42,700	33.36				
3	March	36,000	33.64	43,000	33.59				
Q1									
4	April	36,300	33.00	43,300	33.05				
5	May	36,700	33.36	43,700	33.36				
6	June	37,000	33.64	44,000	33.59				
Q2									
7	July	37,300	33.00	44,300	33.06				
8	Aug.	37,700	33.36	44,700	33.36				
9	Sept.	38,000	33.63	45,000	33.58				
Q3									
10	Oct.	38,300	33.02	45,300	33.07				
11	Nov.	38,700	33.36	45,700	33.36				
12	Dec.	39,000	33.62	46,000	33.58				
Q4									
ANNUAL SUMMARY									

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TABLE VII-6(d)

MEREC. INDICATOR ACHIEVEMENT REGISTER

1986 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	39,300	33.03%	46,300	33.07%				
2	Feb.	39,700	33.36	46,700	33.36				
3	March	40,000	33.61	47,000	33.57				
Q1									
4	April	40,300	33.03	47,300	33.08				
5	May	40,700	33.36	47,700	33.36				
6	June	41,000	33.61	48,000	33.57				
Q2									
7	July	41,300	33.04	48,300	33.08				
8	Aug.	41,700	33.36	48,700	33.36				
9	Sept.	42,000	33.60	49,000	33.56				
Q3									
10	Oct.	42,300	33.03	49,300	33.09				
11	Nov.	42,700	33.36	49,700	33.36				
12	Dec.	43,000	33.59	50,000	33.56				
Q4									
ANNUAL SUMMARY									

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TABLE VII-6(e)

NEREC INDICATOR ACHIEVEMENT REGISTER

1987 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	43,300	33.05%	50,300	33.09%				
2	Feb.	43,700	33.36	50,700	33.36				
3	March	44,000	33.59	51,000	33.55				
Q1									
4	April	44,300	33.06	51,300	33.10				
5	May	44,700	33.36	51,700	33.35				
6	June	45,000	33.58	52,000	33.55				
Q2									
7	July	45,300	33.07	52,300	33.10				
8	Aug.	45,700	33.36	52,700	33.35				
9	Sept.	46,000	33.58	53,000	33.54				
Q3									
10	Oct.	46,300	33.07	53,300	33.11				
11	Nov.	46,700	33.36	53,700	33.35				
12	Dec.	47,000	33.57	54,000	33.54				
Q4									
ANNUAL SUMMARY									

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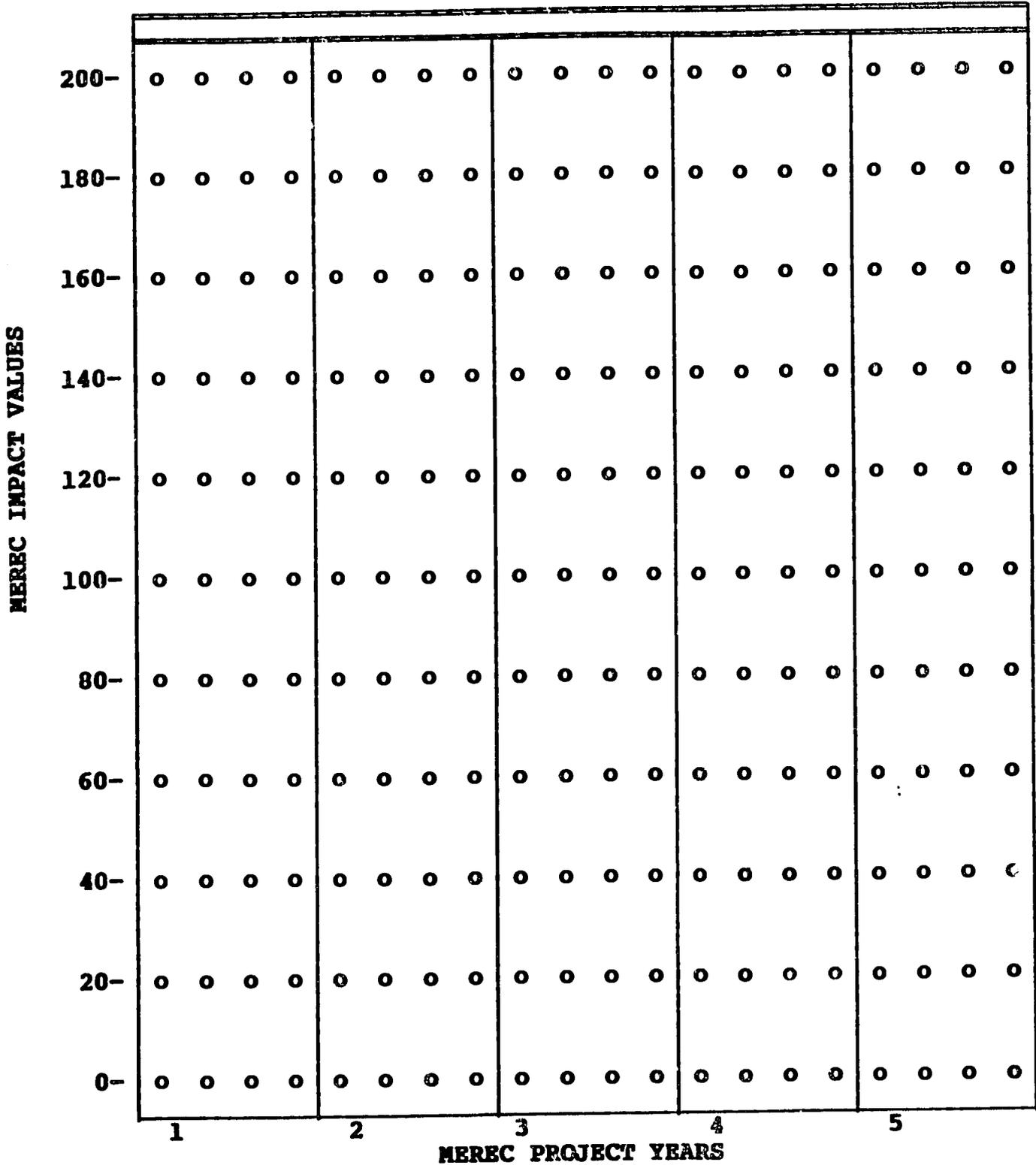
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FIGURE VII-7

MEREC SUB-PROJECT IMPACT VALUE PROFILE

SUB-PROJECT TITLE(S):

INDICATOR(S) MEASURED:



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FIGURE VII-8

MEREC RESOURCE INDICATOR SUMMARY VALUE PROFILE FORM

RESOURCE(S):

INDICATOR(S) MEASURED:

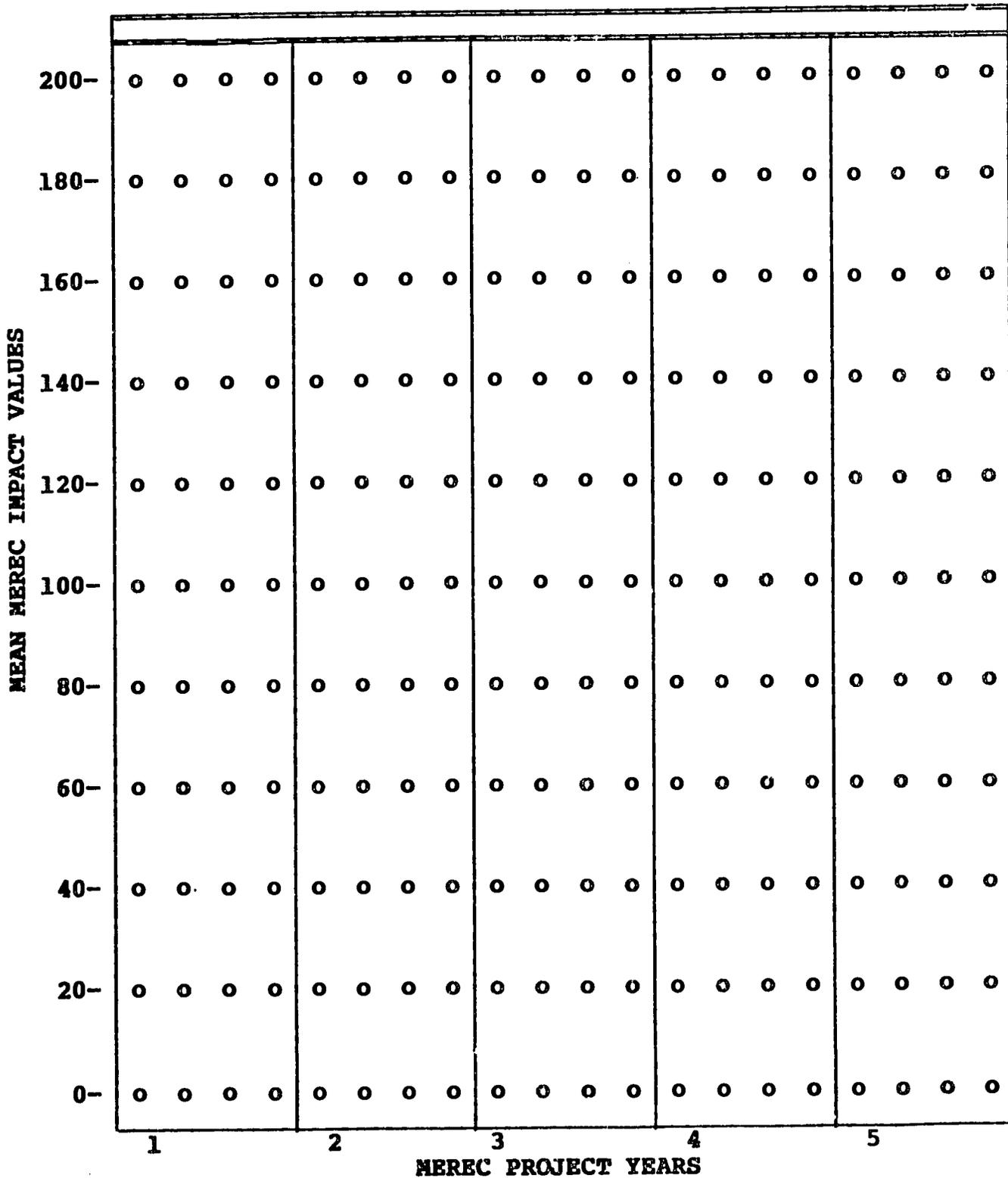


TABLE VII-7

NEREC SUB-PROJECT OVERVIEW FORM

1	<b>SECTOR:</b> Land Use: Resource Indicator
2	<b>SUB-PROJECT TITLE:</b> Urban Farming: Vegetable and Tree Production
3	<b>RESPONSIBLE OFFICIAL:</b> City Agriculturist: Leopoldo M. Alvarez
4	<b>PRIMARY PURPOSE:</b> Increase Food Supplies and Family Incomes
5	<b>MEASUREMENT INDICATOR:</b> Kilograms Per Hectare
6	<b>BEGIN BASELINE VALUE (BBV) OF INDICATOR:</b> BBV = 500
7	<b>NEREC BEGIN VALUE (MBV) OF INDICATOR:</b> MBV = 570
8	<b>DATA COLLECTION SOURCE:</b> Barangays Involved in Project and City Agriculturist's Office
9	<b>DATA COLLECTION METHOD:</b> Monthly Summaries in Kilograms Per Hectare
10	<b>PROJECTED TARGET INDICATOR VALUE (TIV):</b> TIV = 65.0%
11	<b>PROJECT APPROACH:</b> <ul style="list-style-type: none"> <li>a. Information, Education and Training: 1) Purchase equipment (projector, camera, motorcycle and supplies; 2) Design barangay information and instruction program; 3) Barangay introduction to program with aid of carousel, camera, megaphone and motorcycle in barangays.</li> <li>b. Site Identification and Design: 1) Listing of interested households and identification of ideal urban sites for backyard plots, animal production and ipil-ipil plantings; 2) Design of impact evaluation approach.</li> <li>c. Field Implementation: 1) Construction and fencing of backyard plots, including seed plots; 2) Distribution of seeds and commencement of demonstration activities; 3) Construction of poultry and swine houses; 4) Planting of ipil-ipil seedlings--continuous activity; 5) Spraying and fertilizing plots as needed--continuous activity.</li> </ul>

TABLE VII-7 (Continued)

PROJECT APPROACH: (Continued)

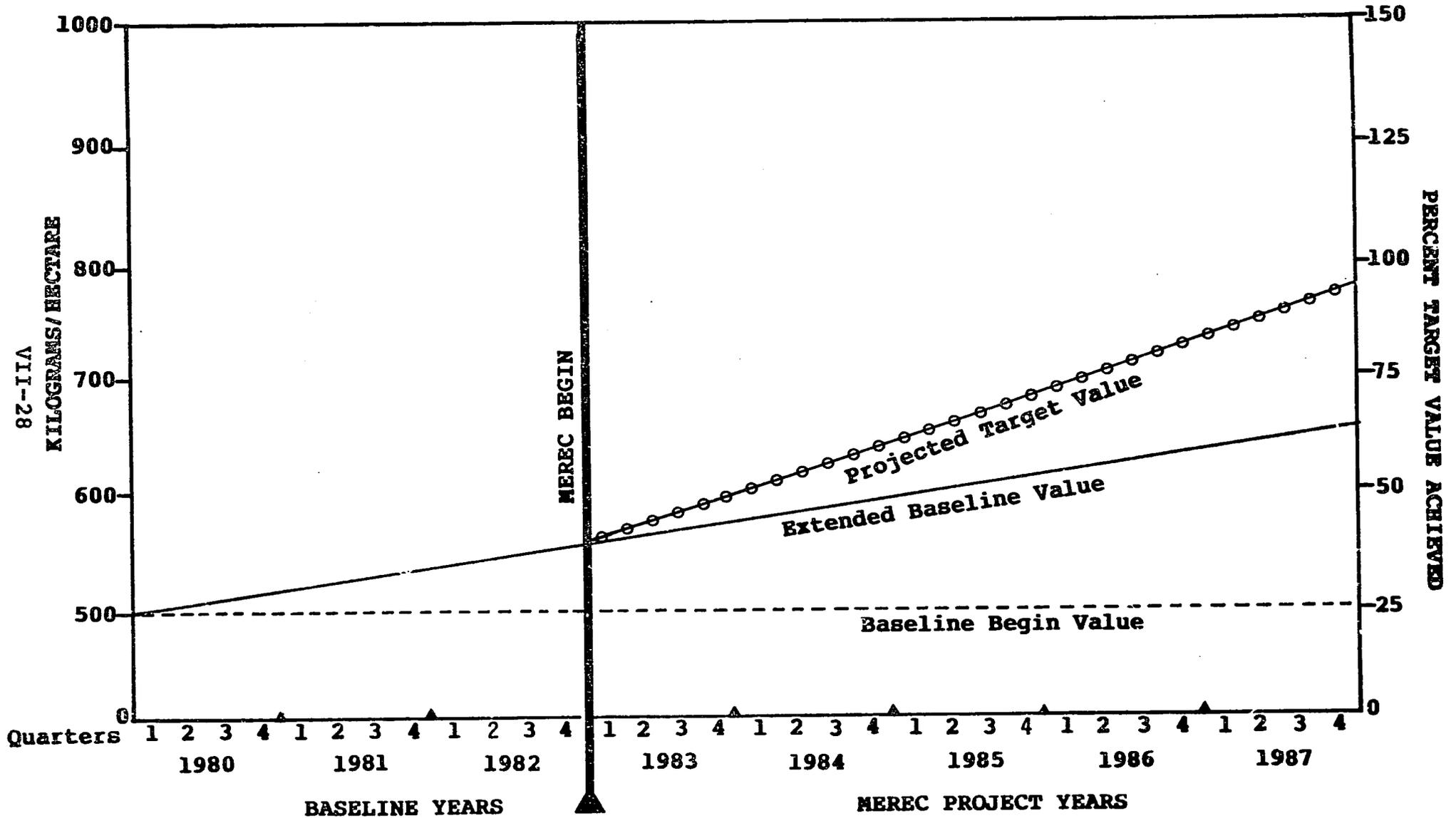
- d. Plans and Programs Developed, based on evaluation results for improvement, expansion and continuation of program.
- e. Weigh and/or estimate vegetable and tree production: monthly and make entries in appropriate MEREC forms.

FIGURE VII-9

MEREC IMPACT INDICATOR DEFINITION CHART  
TACLOBAN CITY

LAND USE SECTOR

URBAN FARMING SUB-PROJECT: VEGETABLE AND TREE PRODUCTION



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**TABLE VII-8**

**MEREC INDICATOR DATA COLLECTION SUMMARY FORM**

<p><b>SECTOR:</b> LAND USE</p>	<p><b>SUB-PROJECT INDICATOR:</b> Kilograms Per Hectare</p>
<p><b><u>MEASUREMENT METHOD:</u></b> Obtain Data Routinely from City Agriculturist's Office as to Kilograms Per Hectare of Vegetable and Tree Production.</p>	
<p><b><u>FREQUENCY OF DATA PICK-UP:</u></b> To be Coordinated with Tacloban Officials</p>	
<p><b><u>LOCATION(S):</u></b> Barangays Involved in Project and City Agriculturist's Office</p>	
<p><b><u>DATA ORGANIZATION:</u></b></p> <ol style="list-style-type: none"> <li>1. Weigh Vegetable and Tree Production in Barangays Monthly.</li> <li>2. Enter in MEREC Indicator Achievement Register Form (TABLE VII-3)</li> <li>3. Enter in MEREC Sub-Project Impact Value Profile Quarterly (FIGURE VII-3).</li> <li>4. Enter Quarterly in MEREC Resource Indicator Summary Value Profile Form in Mayor's Office (FIGURE VII-4)</li> </ol>	
<p><b><u>DATA COMPUTATION:</u></b></p> <ol style="list-style-type: none"> <li>1. Quarterly Average of Monthly Results for Entry in MEREC Indicator Achievement Register Form (TABLE VII-3)</li> <li>2. Annual Average Every Four Quarters for Entry in MEREC Indicator Achievement Register Form (TABLE VII-3)</li> </ol>	

VII-29

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TABLE VII-9(a)

MEREC INDICATOR ACHIEVEMENT REGISTER

1983 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	July	560	32.90%	580	33.11%				
2	Aug.	567	33.31	584	33.33				
3	Sept.	575	33.78	588	33.56				
Q1									
4	Oct.	577	33.26	590	33.24				
5	Nov.	578	33.31	591	33.30				
6	Dec.	580	33.43	594	33.46				
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

VII-30

1/8

TABLE VII-9(b)

MEREC INDICATOR ACHIEVEMENT REGISTER

1984 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	582	33.26%	603	33.13%				
2	Feb.	583	33.31	607	33.35				
3	March	585	33.43	610	33.52				
Q1									
4	April	587	33.26	613	33.14				
5	May	588	33.31	617	33.35				
6	June	590	33.43	620	33.51				
Q2									
7	July	592	33.26	623	33.14				
8	Aug.	593	33.31	627	33.35				
9	Sept.	595	33.43	630	33.51				
Q3									
10	Oct.	597	33.26	633	33.14				
11	Nov.	598	33.31	637	33.35				
12	Dec.	600	33.43	640	33.51				
Q4									
ANNUAL SUMMARY									

VII-31

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TABLE VII-9(c)

MEREC INDICATOR ACHIEVEMENT REGISTER

1985 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	$IV = \frac{AAV}{PTV}$	Quarter
1	Jan.	603	33.19%	648	33.15%				
2	Feb.	606	33.35	672	33.35				
3	March	608	33.46	655	33.50				
Q1									
4	April	608.5	33.29	658	33.15				
5	May	609.5	33.24	662	33.35				
6	June	610	33.37	665	33.50				
Q2									
7	July	613	33.19	668	33.15				
8	Aug.	616	33.35	672	33.35				
9	Sept.	618	33.46	675	33.50				
Q3									
10	Oct.	618.5	33.34	682	33.35				
11	Nov.	619.5	33.34	682	33.35				
12	Dec.	620	33.37	685	33.50				
Q4									
ANNUAL SUMMARY									

VII-32

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TABLE VII-9(d)

NEREC INDICATOR ACHIEVEMENT REGISTER

1986 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	621	33.23%	692	33.19%				
2	Feb.	623	33.33	695	33.33				
3	March	625	33.44	698	33.48				
Q1									
4	April	627	33.26	703	33.16				
5	May	628	33.32	707	33.35				
6	June	630	33.42	710	33.49				
Q2									
7	July	632	33.26	713	33.16				
8	Aug.	633	33.32	717	33.35				
9	Sept.	635	33.42	720	33.49				
Q3									
10	Oct.	637	33.26	723	33.17				
11	Nov.	638	33.32	727	33.35				
12	Dec.	640	33.42	730	33.49				
Q4									
ANNUAL SUMMARY									

VII-33

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TABLE VII-9(e)

MEREC INDICATOR ACHIEVEMENT REGISTER

1987 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	642	33.26%	743	33.17%				
2	Feb.	643	33.32	747	33.35				
3	March	645	33.42	750	33.48				
Q1									
4	April	647	33.26	753	33.17				
5	May	648	33.32	757	33.35				
6	June	650	33.42	760	33.48				
Q2									
7	July	652	33.27	763	33.35				
8	Aug.	653	33.32	767	33.35				
9	Sept.	655	33.42	770	33.48				
Q3									
10	Oct.	657	33.27	773	33.18				
11	Nov.	658	33.32	777	33.35				
12	Dec.	660	33.42	780	33.48				
Q4									
ANNUAL SUMMARY									

VII-34

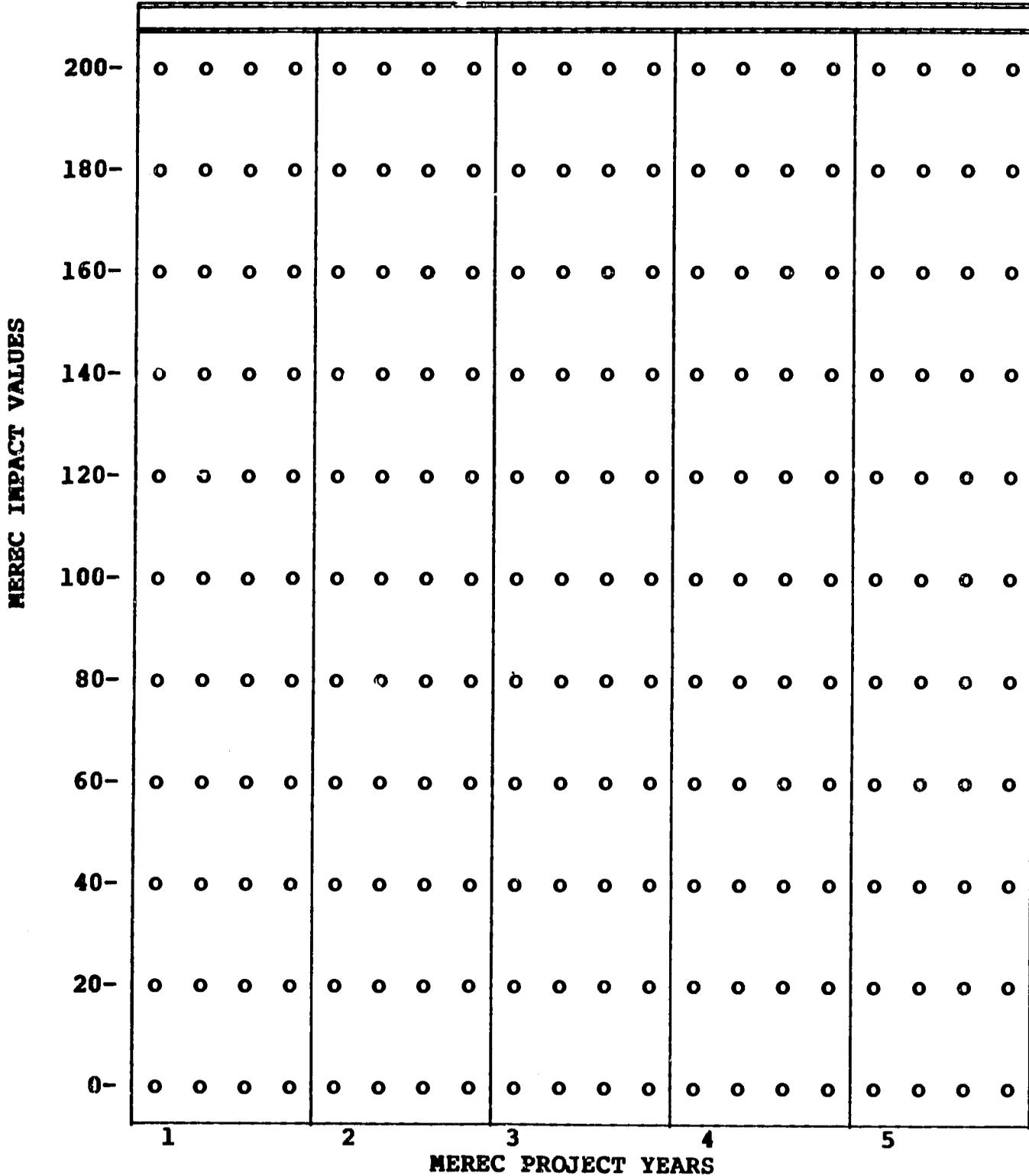
122

FIGURE VII-10

MEREC SUB-PROJECT IMPACT VALUE PROFILE

SUB-PROJECT TITLE(S) :

INDICATOR(S) MEASURED :



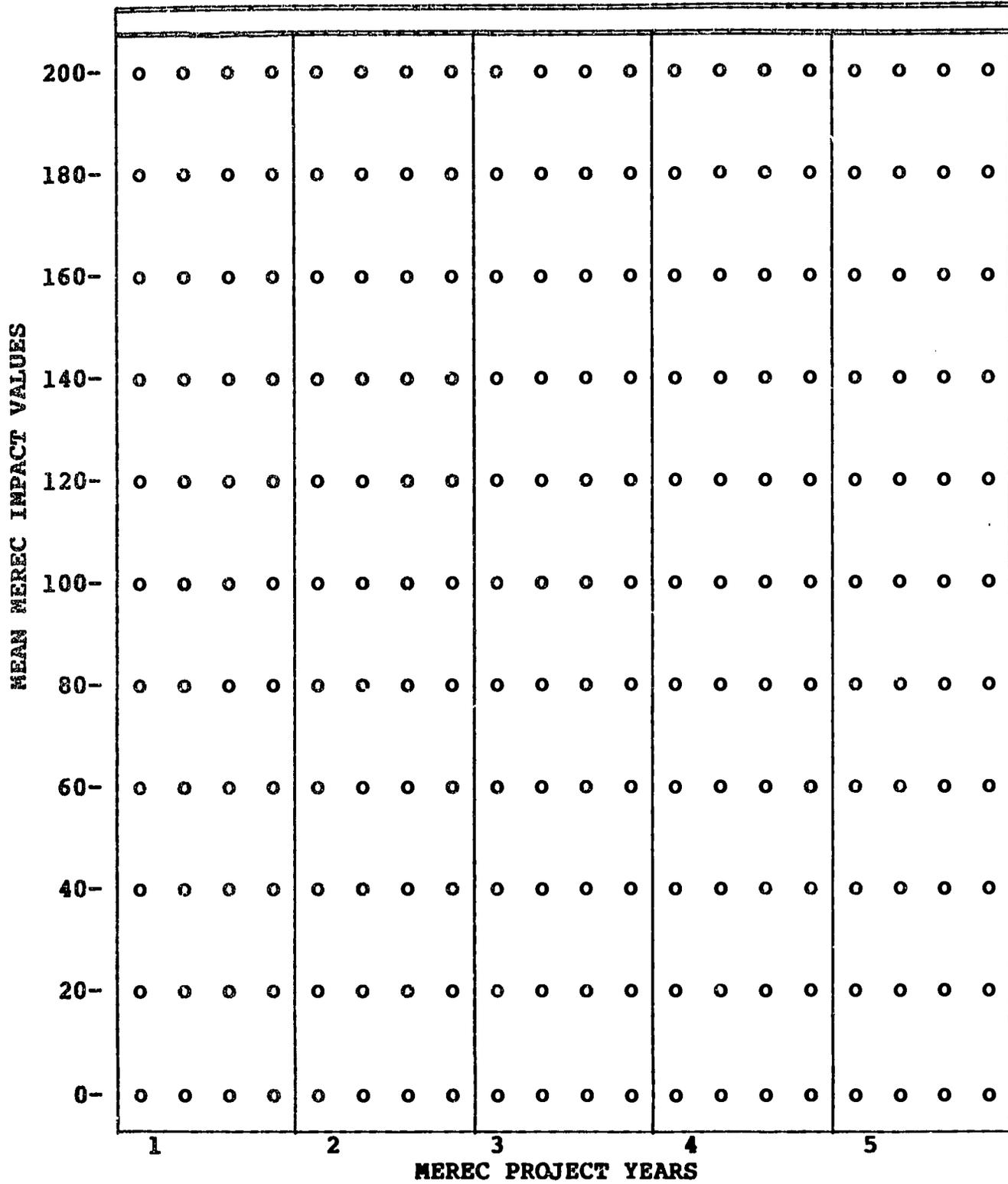
123

FIGURE VII-11

MEREC RESOURCE INDICATOR SUMMARY VALUE PROFILE FORM

RESOURCE(S):

INDICATOR(S) MEASURED:



MEREC PROJECT YEARS

VII-36

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## CAVEATS AND INTERPRETATIONS: URBAN FARMING

The Urban Farming sub-project is dependent on such factors as the following for success:

- Cooperation of residents in making small parcels of agriculturally suitable land available.
- Obtaining sufficient increases in yield in meat, vegetables, and firewood to justify the effort involved.
- Assuring that residents learn to create conditions that result in hygienic and edible farm stock and vegetables.

The essential problem in the urban farming area is to ultimately transfer the skills and knowledge necessary to raise farm animals and vegetables to those citizens who will most benefit from such an effort. The current team of highly competent personnel seems likely to reach its targets during the MEREC years. However, the problem of impact in measuring this aspect of the MEREC project is the degree to which Tacloban residents learn the techniques and employ them to improve the health, nutrition, and income of their families.

# *CHAPTER VIII*

**CHAPTER VIII**

**SECTOR:** Housing

**SUB-PROJECT:** Demonstration Housing

**FIGURE VIII-1**

**SECTOR COMPLETION REQUIREMENTS FORM**

**A. COORDINATION TASKS REMAINING**

1. MEREC Sector Overview Form
2. MEREC Sub-Project Overview Form
3. MEREC Impact Indicator Definition Chart
4. MEREC Indicator Data Collection Summary Form
5. MEREC Indicator Achievement Register

* Submitted	To be ** Completed
X	
X	
X	
	X
X	

**B. COMPLETION NOTES**

A-1

Information Submitted

A-2

Information Submitted

A-3

Information Submitted

A-4

Important that data relevant to chemicals, materials and construction be systematically gathered as well as cost and maintenance following construction.

A-5

Information Submitted

\* Submitted: Tacloban officials review information with MEREC representatives and make changes based on best available Tacloban information consistent with MEREC project objectives.

\*\* To be

Completed: Review existing information in Tacloban and working with MEREC representatives supply missing data and/or entries as required to meet MEREC objectives.

FIGURE VIII-2

MEREC SECTOR OVERVIEW FORM

HOUSING: Resource Indicator		
<b>SECTOR PURPOSE:</b> Construct Fourteen Units in Demonstration Community. Demonstrate Use and Cost Savings from Chemically Treated Local/Indigenous Materials.		
<b>COORDINATING SECTORS:</b> Waste Management, Transportation, Water and Sewer, Urban Farming, and Education and Training.		
<b>SECTOR PRIMARY OBJECTIVE:</b> Demonstrate Use of Local/Indigenous and Improved Building Materials for House Construction and Energy Use and Resource Conservation.		
<b>M E R E C S U B - P R O J E C T S</b>		
<b><u>SUB-PROJECT #1</u></b>	<b><u>SUB-PROJECT #2</u></b>	<b><u>SUB-PROJECT #3</u></b>
<b>TITLE:</b> Demonstration Housing	<b>TITLE:</b>	<b>TITLE:</b>
<b>PRIMARY OBJECTIVE:</b> Conserve Energy Using Local Indigenous Materials to Extend Housing Life	<b>PRIMARY OBJECTIVE:</b>	<b>PRIMARY OBJECTIVE:</b>
<b>INDICATOR:</b> Pesos Per Year, Per House Unit	<b>INDICATOR:</b>	<b>INDICATOR:</b>
<b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b> ₱3,410/Unit	<b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b>	<b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b>

VIII-2

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**TABLE VIII-1**

**MEREC SUB-PROJECT OVERVIEW FORM**

1	<b>SECTOR:</b> Housing: Resource Indicator
2	<b>SUB-PROJECT TITLE:</b> Demonstration Housing
3	<b>RESPONSIBLE OFFICIAL:</b> City Engineer: Demiano B. Nadera
4	<b>PRIMARY PURPOSE:</b> Reduce Costs and Extend Life of Materials Through Chemical Treatment and Use of Local and Indigenous Materials
5	<b>MEASUREMENT INDICATOR:</b> Cost in Pesos Per Year, Per Housing Unit
6	<b>BEGIN BASELINE VALUE (BBV) OF INDICATOR:</b> BBV = ₱5,383/Unit
7	<b>MEREC BEGIN VALUE (MBV) OF INDICATOR:</b> MBV = ₱3,410/Unit/Yr
8	<b>DATA COLLECTION SOURCE:</b> City Engineer's Office and City Planning and Development Office
9	<b>DATA COLLECTION METHOD:</b> Monthly Summaries
10	<b>PROJECTED TARGET INDICATOR VALUE (TIV):</b> TIV = ₱3,410/Unit
11	<b>PROJECT APPROACH:</b> <ol style="list-style-type: none"> <li>a. Design Cleared by Human Settlements</li> <li>b. Reproduction of 24 Plans Needed</li> <li>c. Certification of Availability of Funds</li> <li>d. Advertise for Bids</li> <li>e. Select Contractor and Award Contract</li> <li>f. Site Preparation</li> <li>g. Construct Houses</li> <li>h. Compute Housing Cost Per Meter (Including Maintenance and Chemicals)</li> <li>i. Make Monthly Summaries and Enter in MEREC Indicator Achievement Register Form (Table VIII-3)</li> </ol>

FIGURE VIII-3

MEREC IMPACT INDICATOR DEFINITION CHART  
TACLOBAN CITY

HOUSING SECTOR

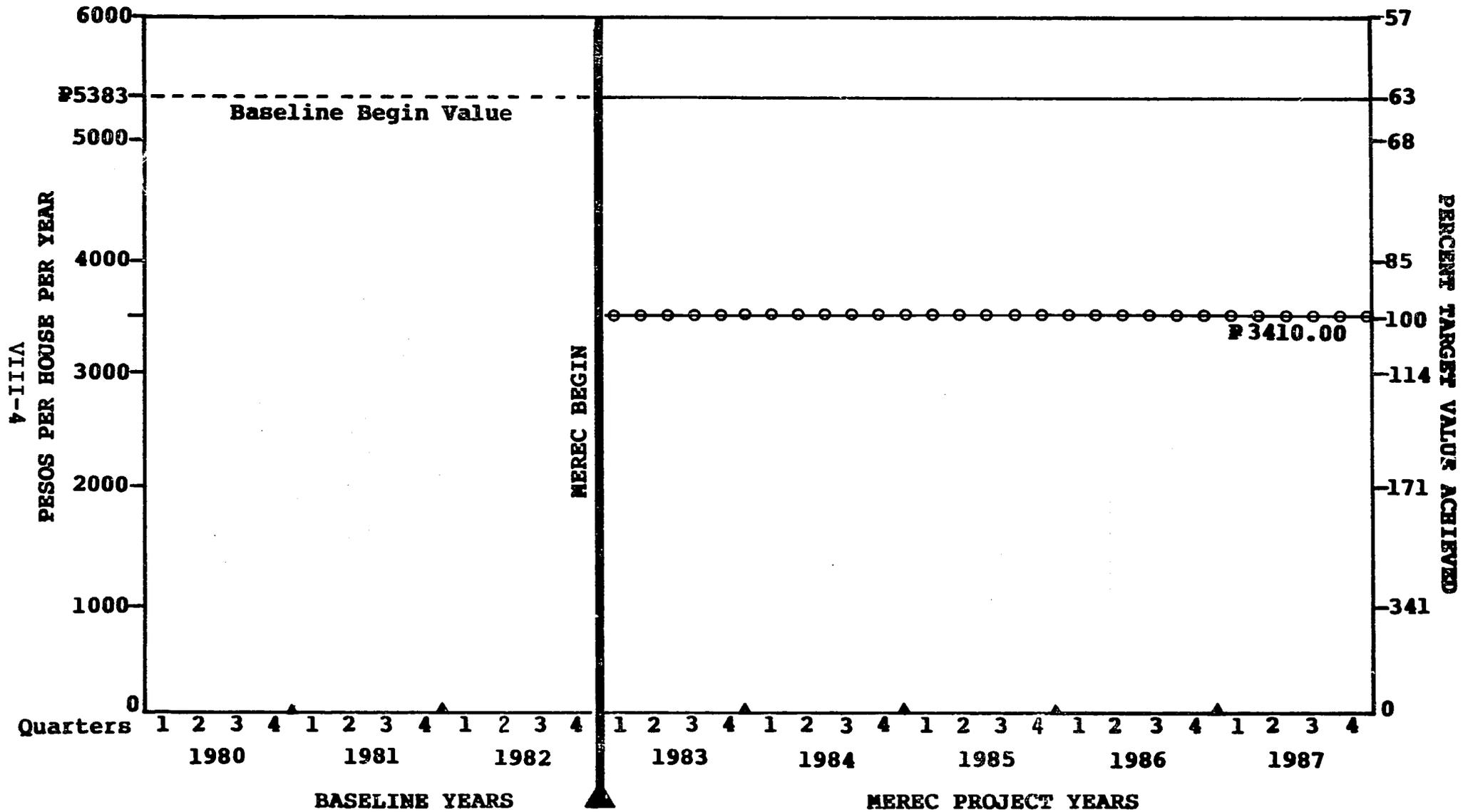


TABLE VIII-2

MEREC INDICATOR DATA COLLECTION SUMMARY FORM

<p><b>SECTOR:</b> HOUSING</p>	<p><b>SUB-PROJECT INDICATOR:</b> Pesos Per Year, Per House Unit</p>
<p><b><u>MEASUREMENT METHOD:</u></b>          Obtain Data Routinely From City Engineer's Office as to Cost in Pesos Per Year, Per House Unit. It is Assumed by The Sector Chief That Maintenance Costs Will be ₱50 Per Year and That The Chemical Treatment to Extend The Longevity of Materials Will be Approximately ₱1,200 Per House Unit</p>	
<p><b><u>FREQUENCY OF DATA PICK-UP:</u></b>          To be Coordinated With Tacloban Officials</p>	
<p><b><u>LOCATION(S):</u></b>          Data Collection Locations The Housing Demonstration Area and City Engineer's Office</p>	
<p><b><u>DATA ORGANIZATION:</u></b></p> <ol style="list-style-type: none"> <li>1. Use of MEREC Indicator Achievement Register Form (Table VII-3)</li> <li>2. Enter in MEREC Sub-Project Impact Value Profile Quarterly (Figure VII-3)</li> <li>3. Enter Quarterly in MER#C Resource Indicator Summary Value Profile Form in Mayor's Office (Figure VII-4)</li> </ol>	
<p><b><u>DATA COMPUTATION:</u></b></p> <ol style="list-style-type: none"> <li>1. Quarter Average of Monthly Results for Entry in MEREC Indicator Achievement Register Form (Table VII-3)</li> <li>2. Annual Average Every Four Quarters for Entry in MEREC Indicator Achievement Register Form (Table VII-3)</li> </ol>	

VIII-5

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TABLE VIII-3(a)

MEREC INDICATOR ACHIEVEMENT REGISTER

1983 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	May	521,940	22.30%	520,770	22.30%				
2	June	524,843	22.35	519,912	22.14				
3	July	527,753	22.40	519,272	22.04				
Q1									
4	Aug.	530,671	22.45	518,616	21.94				
5	Sept.	533,597	22.50	517,708	21.83				
6	Oct.	536,530	22.55	517,020	21.73				
Q2									
7	Nov.	539,710	22.61	516,078	21.62				
8	Dec.	542,660	22.66	515,359	21.52				
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

9-IIIA

TABLE VIII-3(b)

NEREC INDICATOR ACHIEVEMENT REGISTER

1984 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	546,124	22.71%	514,81	21.41%				
2	Feb.	549,597	22.76	514,583	21.31				
3	March	554,293	22.81	514,284	21.21				
Q1									
4	April	556,573	22.86	513,722	21.10				
5	May	560,321	22.92	513,383	21.00				
6	June	563,836	22.97	512,779	20.89				
Q2									
7	July	567,360	23.02	512,398	20.79				
8	Aug.	572,132	23.07	512,999	20.69				
9	Sept.	574,439	23.12	511,330	20.58				
Q3									
10	Oct.	577,993	23.17	510,889	20.48				
11	Nov.	581,557	23.22	510,394	20.38				
12	Dec.	585,132	23.21	509,695	20.27				
Q4									
ANNUAL SUMMARY									

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TABLE VIII-3(c)

MEREC INDICATOR ACHIEVEMENT REGISTER

1985 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	588,832	23.32%	509,214	20.17%				
2	Feb.	592,543	23.37	508,619	20.06				
3	March	596,519	23.43	508,174	19.96				
Q1									
4	April	600,252	23.48	507,709	19.86				
5	May	603,996	23.53	506,966	19.75				
6	June	607,749	23.58	506,458	19.65				
Q2									
7	July	611,514	23.63	505,670	19.57				
8	Aug.	615,289	23.68	505,119	19.44				
9	Sept.	619,335	23.74	504,547	19.34				
Q3									
10	Oct.	623,132	23.79	503,692	19.23				
11	Nov.	626,939	23.84	503,077	19.13				
12	Dec.	630,757	23.89	502,177	19.02				
Q4									
ANNUAL SUMMARY									

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TABLE VIII-3(d)

MEREC INDICATOR ACHIEVEMENT REGISTER

1986 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	634,711	23.94%	501,6	18.92%				
2	Feb.	638,676	23.99	500,771	18.81				
3	March	642,652	24.04	500,167	18.71				
Q1									
4	April	646,907	24.10	499,541	18.61				
5	May	650,906	24.15	498,624	18.50				
6	June	654,916	24.20	497,953	18.40				
Q2									
7	July	658,937	24.25	496,988	18.29				
8	Aug.	662,968	24.30	496,271	18.19				
9	Sept.	667,011	24.35	495,533	18.09				
Q3									
10	Oct.	671,340	24.41	494,498	17.98				
11	Nov.	675,406	24.46	493,715	17.88				
12	Dec.	679,483	24.51	492,632	17.77				
Q4									
ANNUAL SUMMARY									

6-III A

1986

TABLE VIII-3(e)

MEREC INDICATOR ACHIEVEMENT REGISTER

1987 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	683,706	24.56%	491,911	17.67%				
2	Feb.	687,941	24.61	491,147	17.51				
3	March	692,187	24.66	490,089	17.46				
Q1									
4	April	696,727	24.72	489,287	17.36				
5	May	700,997	24.77	488,179	17.25				
6	June	705,279	24.82	487,330	17.15				
Q2									
7	July	709,572	24.87	486,458	17.05				
8	Aug.	713,878	24.92	485,277	16.94				
9	Sept.	718,194	24.97	484,357	16.84				
Q3									
10	Oct.	722,811	25.03	483,126	16.73				
11	Nov.	727,152	25.08	482,159	16.63				
12	Dec.	731,505	25.13	481,169	16.53				
Q4									
ANNUAL SUMMARY									

VIII-10

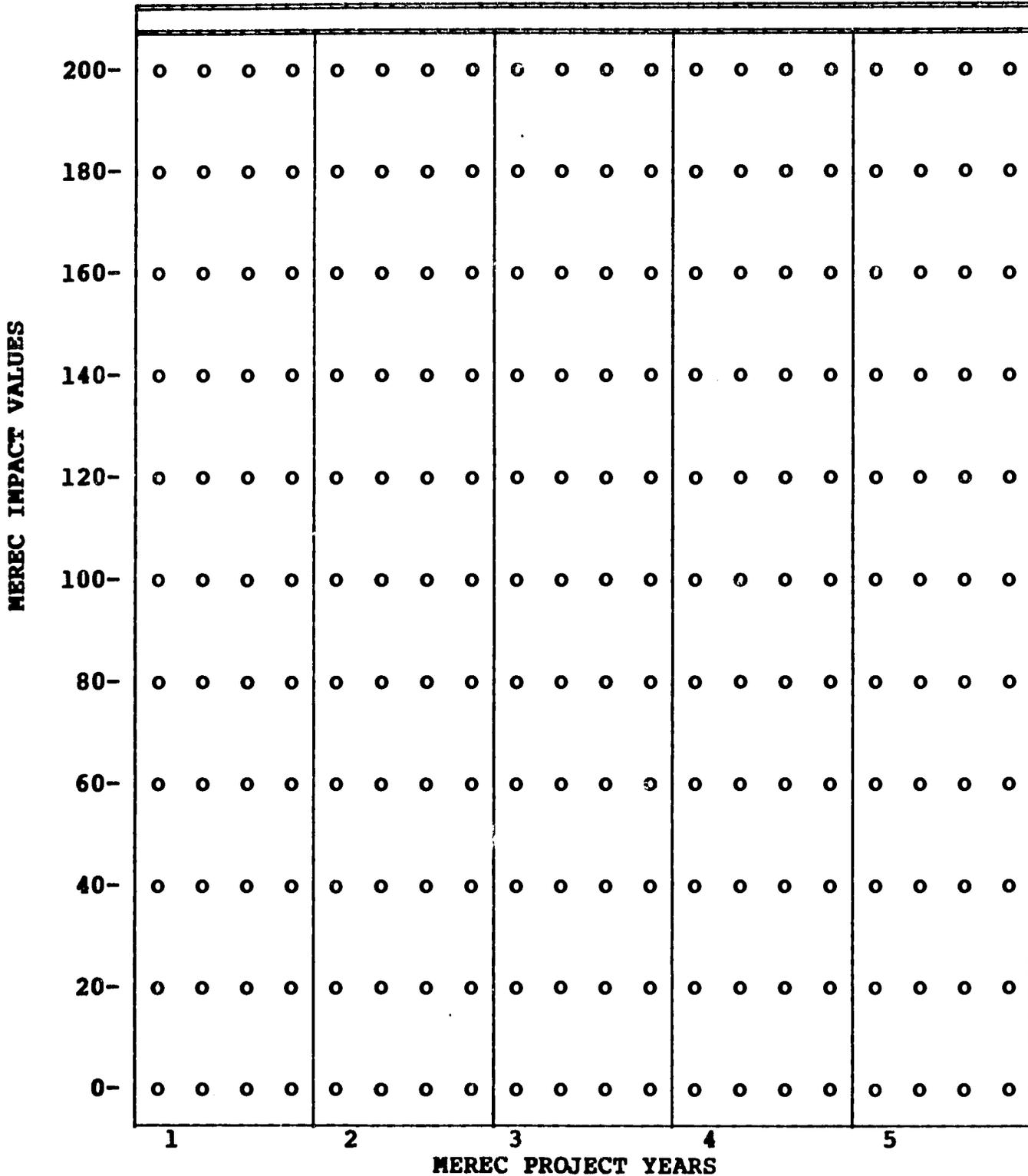
135

FIGURE VIII-4

MEREC SUB-PROJECT IMPACT VALUE PROFILE

SUB-PROJECT TITLE(S):

INDICATOR(S) MEASURED:



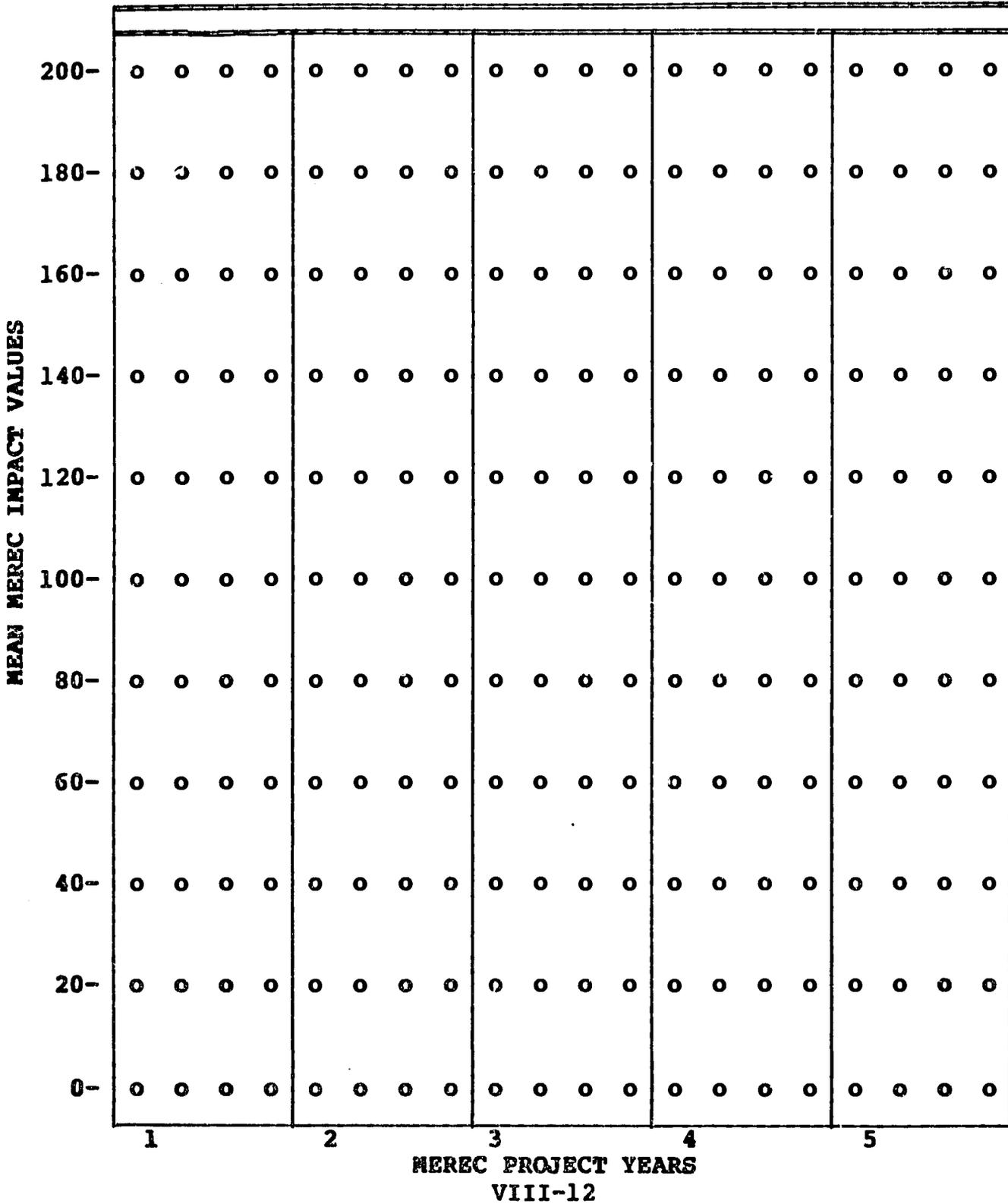
VIII-11

FIGURE VIII-5

MEREC RESOURCE INDICATOR SUMMARY VALUE PROFILE FORM

RESOURCE(S):

INDICATOR(S) MEASURED:



## **CAVEATS AND INTERPRETATIONS: HOUSING SECTOR**

The basic assumption underlying this Sector lies in the value of the selected chemical treatment for extending the years of life of a house with no significant increase in total cost. Essentially, the cost in pesos per cubic meter per year depends upon whether chemically treated wood lasts appreciably longer than non-treated wood. If a 25,000 Peso house lasts five years, the cost is 5,000 Pesos per year; if it lasts ten years, its cost is 2,500 Pesos per year. All other things being equal, the success of the Housing Sector depends upon whether the new chemical treatment extends housing life. If it does, then the cost in pesos per year will be reduced. However, if housing life remains the same then costs will increase slightly as the chemical treatment is fairly expensive. If the worst occurs and the expensive chemical treatment actually reduces the life of these houses, then the cost per year will rise substantially above current costs. The essential problem is to locate chemicals which are relatively low in cost, can be applied to indigenous timber, and which substantially extend the use-life of the houses. If this occurs, in whole or in part, the longrange benefits to the community could be enormous.

# CHAPTER IX

**CHAPTER IX**

**SECTOR:** Water and Sewer

**SUB-PROJECT:** Land Drain

**FIGURE IX-1(a)**

**SECTOR COMPLETION REQUIREMENTS FORM**

**A. COORDINATION TASKS REMAINING**

- 1. MEREC Sector Overview Form
- 2. MEREC Sub-Project Overview Form
- 3. MEREC Impact Indicator Definition Chart
- 4. MEREC Indicator Data Collection Summary Form
- 5. MEREC Indicator Achievement Register

<b>* Submitted</b>	<b>To be ** Completed</b>
X	
	X
X	
X	
X	

**B. COMPLETION NOTES**

- A-1 Information Submitted
- A-2 Complete Project Approach with appropriate Tacloban officials
- A-3 Information Submitted
- A-4 Information Submitted
- A-5 Information Submitted

\* Submitted: Tacloban officials review information with MEREC representatives and make changes based on best available Tacloban information consistent with MEREC project objectives.

\*\* To be Completed: Review existing information in Tacloban and working with MEREC representatives supply missing data and/or entries as required to meet MEREC objectives.

**CHAPTER IX**

**SECTOR:** Water and Sewer

**SUB-PROJECT:** Saving Water

**FIGURE IX-1(b)**

**SECTOR COMPLETION REQUIREMENTS FORM**

**A. COORDINATION TASKS REMAINING**

1. MEREC Sector Overview Form
2. MEREC Sub-Project Overview Form
3. MEREC Impact Indicator Definition Chart
4. MEREC Indicator Data Collection Summary Form
5. MEREC Indicator Achievement Register

* Submitted	To be ** Completed
X	
X	
	X
X	
	X

**B. COMPLETION NOTES**

- A-1 

Information Submitted
-----------------------
- A-2 

Information Submitted
-----------------------
- A-3 

MEREC Impact Indicator Definition Chart not yet submitted, to be developed by Tacloban officials
--
- A-4 

Information Submitted
-----------------------
- A-5 

MEREC Indicator Achievement Register data not yet presented
---

\* Submitted: Tacloban officials review information with MEREC representatives and make changes based on best available Tacloban information consistent with MEREC project objectives.

\*\* To be Completed: Review existing information in Tacloban and working with MEREC representatives supply missing data and/or entries as required to meet MEREC objectives.

**FIGURE IX-2**

**MEREC SECTOR OVERVIEW FORM**

<b>WATER AND SEWER:</b> Resource Indicator
<b>SECTOR PURPOSE:</b> Improve Land Value of Land Through Drainage
<b>COORDINATING SECTORS:</b> Water, Land Use, Waste Management, and Education and Training
<b>SECTOR PRIMARY OBJECTIVE:</b> Increase Use and Tax Values of Land

**MEREC SUB-PROJECTS**

<u><b>SUB-PROJECT #1</b></u>	<u><b>SUB-PROJECT #2</b></u>	<u><b>SUB-PROJECT #3</b></u>
<b>TITLE:</b> Land Drain	<b>TITLE:</b> Saving Water	<b>TITLE:</b>
<b>PRIMARY OBJECTIVE:</b> Increase Value of Land for Residential and Industrial Use Through Drainage	<b>PRIMARY OBJECTIVE:</b> Reduce Current Water Loss by 50 Percent by Completion of MEREC Years	<b>PRIMARY OBJECTIVE:</b>
<b>INDICATOR:</b> Pesos Per Hectare (000)	<b>INDICATOR:</b> Percent Reduction in Water Loss Between Source and Meters by 50 Percent	<b>INDICATOR:</b>
<b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b>  ₱400,000	<b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b> To be Developed by Tacloban Officials in Coordination With MEREC Representatives	<b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b>

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**TABLE IX-1**

**MEREC SUB-PROJECT OVERVIEW FORM**

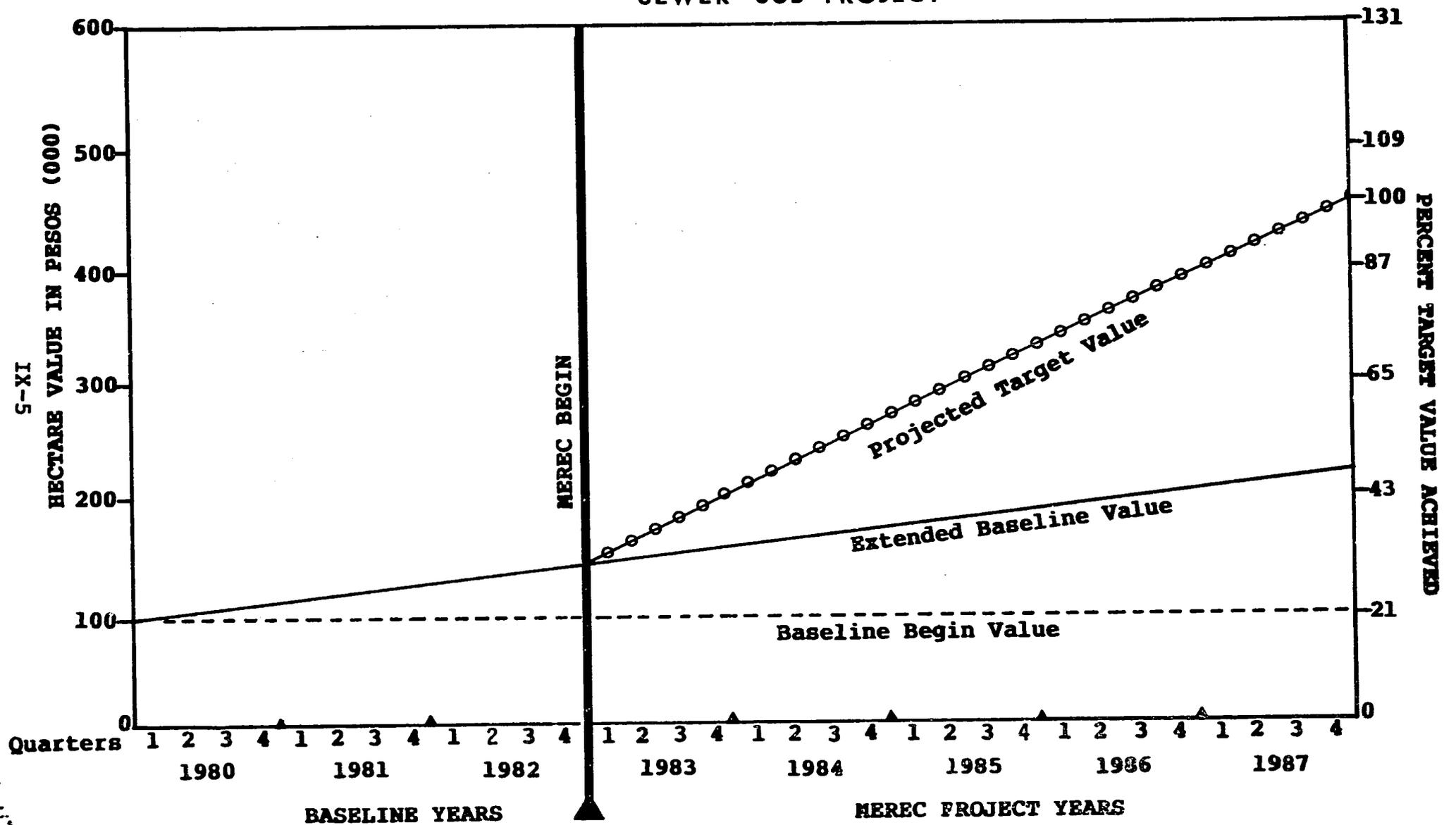
1	<b><u>SECTOR:</u></b> Water and Sewer: Resource Indicator
2	<b><u>SUB-PROJECT TITLE:</u></b> Sewer: Land Drain
3	<b><u>RESPONSIBLE OFFICIAL:</u></b> Supervising Engineer: Rodolfo Cadavis
4	<b><u>PRIMARY PURPOSE:</u></b> Improve Land Value For Residences and Industry Through Drainage
5	<b><u>MEASUREMENT INDICATOR:</u></b> Pesos Per Hectare (000)
6	<b><u>BEGIN BASELINE VALUE (BBV) OF INDICATOR:</u></b> BBV = ₱100,000
7	<b><u>MEREC BEGIN VALUE (MBV) OF INDICATOR:</u></b> MBV = ₱136,000
8	<b><u>DATA COLLECTION SOURCE:</u></b> Tacloban City Assessor's Office
9	<b><u>DATA COLLECTION METHOD:</u></b> Monthly Summaries
10	<b><u>PROJECTED TARGET INDICATOR VALUE (TIV):</u></b> TIV = ₱390,000
11	<b><u>PROJECT APPROACH:</u></b>  <p style="text-align: center;">Details of Drainage Sequence To Be Completed by Tacloban City Officials, Specifically by Supervising Civil Engineer Cadavis in Coordination With MEREC Representatives Following Receipt of Topographic Plan</p>

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FIGURE IX-3

MEREC IMPACT INDICATOR DEFINITION CHART  
TACLOBAN CITY

WATER AND SEWER SECTOR  
SEWER SUB-PROJECT



**TABLE IX-2**

**MEREC INDICATOR DATA COLLECTION SUMMARY FORM**

<b>SECTOR:</b> WATER AND SEWER	<b>SUB-PROJECT INDICATOR:</b> Pesos Per Hectare (000)
<b><u>MEASUREMENT METHOD:</u></b>  Obtain Data Routinely From City Assessor's Office as to Value Per Hectare in Thousands of Pesos for Land in Drainage Area(s)	
<b><u>FREQUENCY OF DATA PICK-UP:</u></b>  Monthly	
<b><u>LOCATION(S):</u></b>  Leyte Metropolitan Water District	
<b><u>DATA ORGANIZATION:</u></b>  1. Use of MEREC Achievement Register Form (Table IX-3)  2. Enter Quarterly in MEREC Sub-Project Impact Value Profile (Figure IX-3)  3. Enter Quarterly in MEREC Resource Indicator Summary Value Profile Form in Mayor's Office (Figure IX-4)	
<b><u>DATA COMPUTATION:</u></b>  1. Quarterly Average of Monthly Results for Entry in MEREC Indicator Achievement Register Form (Table IX-3)  2. Annual Average Every Four Quarters for Entry in MEREC Indicator Achievement Register Form (Table IX-3)	

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**TABLE IX-3(a)**

**MEREC INDICATOR ACHIEVEMENT REGISTER (SEWER SECTOR)**

1983 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1		₱160,000.00	32.09%	₱160,000.00	32.32%				
2		161,666.66	33.33	165,000.00	33.33				
3		163,333.32	33.68	170,000.00	34.34				
Q1									
4		164,999.98	33	175,000.00	32.41				
5		166,666.65	33.33	180,000.00	33.33				
6		168,333.31	33.67	185,000.00	34.26				
Q2									
7		169,999.98	33.01	190,000.00	32.48				
8		171,666.64	33.33	195,000.00	33.33				
9		173,333.31	33.66	200,000.00	34.19				
Q3									
10		174,999.98	33.02	205,000.00	32.54				
11		176,666.64	33.33	210,000.00	33.33				
12		198,333.30	33.65	215,000.00	34.43				
Q4									
ANNUAL SUMMARY									

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**TABLE IX-3(b)**

**MEREC INDICATOR ACHIEVEMENT REGISTER (SEWER SECTOR)**

1984 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1		₱180,000.00	33.03	₱220,000.00	32.59				
2		181,666.66	33.33	225,000.00	33.33				
3		183,333.33	33.64	230,000.00	34.07				
Q1									
4		185,000.00	33.04	235,000.00	32.64				
5		186,666.67	33.33	240,000.00	33.33				
6		188,333.34	33.63	245,000.00	34.03				
Q2									
7		190,000.00	33.04	250,000.00	32.68				
8		191,666.71	33.33	255,000.00	33.33				
9		193,333.38	33.62	260,000.00	33.99				
Q3									
10		195,000.00	33.05	265,000.00	32.72				
11		196,666.72	33.33	270,000.00	33.33				
12		198,333.39	33.62	275,000.00	33.95				
Q4									
ANNUAL SUMMARY									

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TABLE IX-3(c)

NEREC INDICATOR ACHIEVEMENT REGISTER (SEWER SECTOR)

1985 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1		₱200,000.00	33.06	₱280,000.00	32.75				
2		201,666.73	33.33	285,000.00	33.33				
3		203,333.40	33.61	290,000.00	33.92				
Q1									
4		205,000.07	33.06	295,000.00	32.78				
5		206,666.74	33.33	300,000.00	33.33				
6		208,333.41	33.61	305,000.00	33.89				
Q2									
7		210,000.00	33.07	310,000.00	32.80				
8		211,666.75	33.33	315,000.00	33.33				
9		213,333.42	33.60	320,000.00	33.86				
Q3									
10		215,000.00	33.08	325,000.00	32.83				
11		216,666.76	33.33	330,000.00	33.33				
12		218,333.43	33.59	335,000.00	33.84				
Q4									
ANNUAL SUMMARY									

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**TABLE IX-3 (d)**

**MEREC INDICATOR ACHIEVEMENT REGISTER (SEWER SECTOR)**

1986 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1		₱220,000.00	33.08	₱340,000.00	32.85				
2		221,666.67	33.33	345,000.00	33.33				
3		223,333.34	33.59	350,000.00	33.82				
Q1									
4		224,000.00	33.58	355,000.00	32.87				
5		226,666.68	33.33	360,000.00	33.33				
6		228,333.35	33.58	365,000.00	33.80				
Q2									
7		230,000.00	33.09	370,000.00	32.89				
8		231,666.69	33.33	375,000.00	33.33				
9		233,333.36	33.58	380,000.00	33.70				
Q3									
10		235,000.03	33.10	385,000.00	32.91				
11		236,666.70	33.33	390,000.00	33.33				
12		238,333.37	33.57	395,000.00	33.76				
Q4									
ANNUAL SUMMARY									

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TABLE IX-3(e)

NEREC INDICATOR ACHIEVEMENT REGISTER (SEWER SECTOR)

1987 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1		₱240,000.00	33.10	₱400,000.00	32.92				
2		241,666.67	33.33	405,000.00	33.33				
3		243,333.34	33.56	410,000.00	33.75				
Q1									
4		245,000.01	33.11	415,000.00	32.94				
5		246,666.68	33.33	420,000.00	33.33				
6		248,333.35	33.56	425,000.00	33.73				
Q2									
7		250,000.02	33.11	430,000.00	32.95				
8		251,666.67	33.33	435,000.00	33.33				
9		253,333.36	33.56	440,000.00	33.72				
Q3									
10		255,000.08	33.12	445,000.00	32.96				
11		256,666.70	33.33	450,000.00	33.33				
12		258,333.37	33.55	455,000.00	33.71				
Q4									
ANNUAL SUMMARY									

II-XI

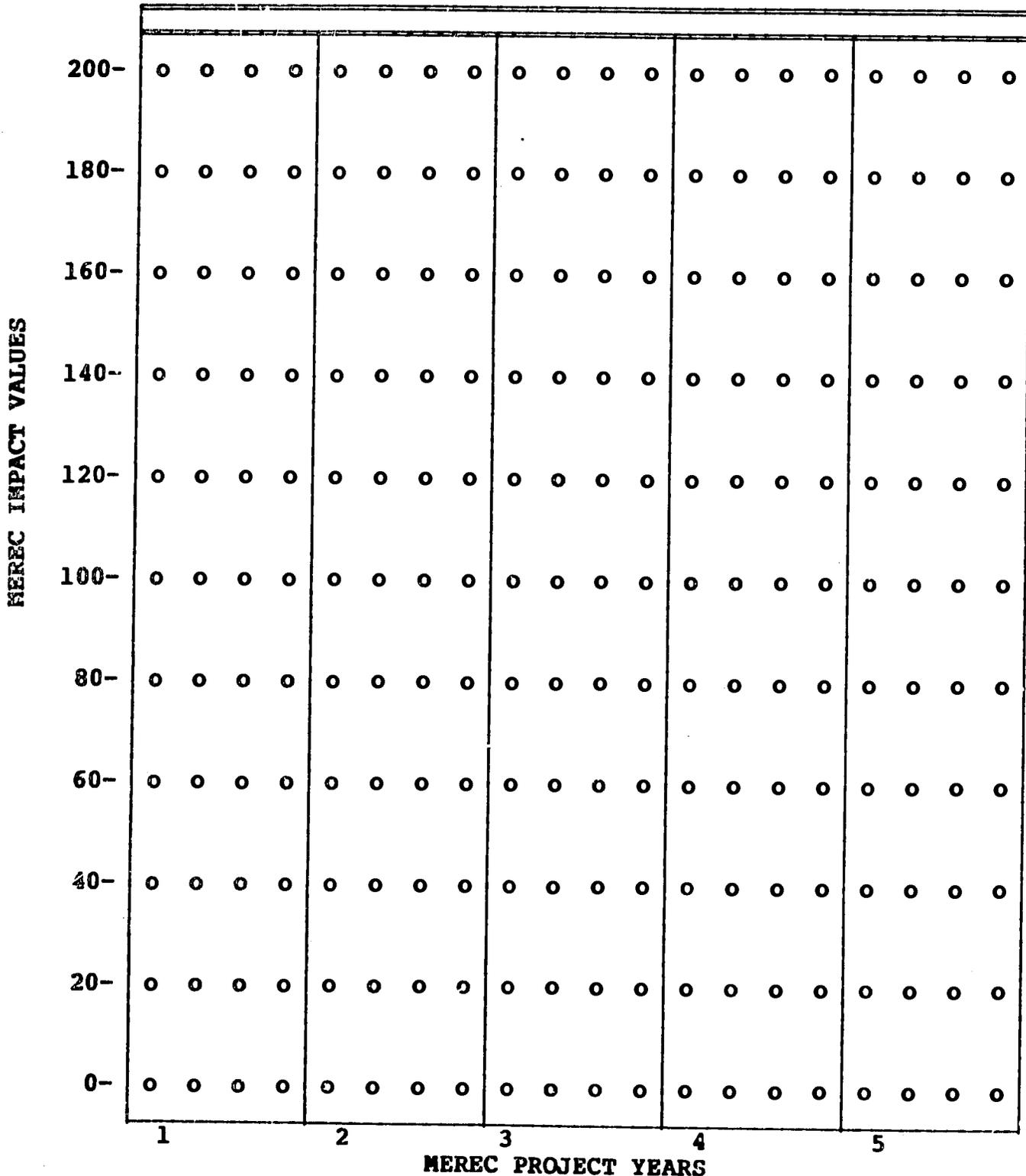
1989

FIGURE IX-4

MEREC SUB-PROJECT IMPACT VALUE PROFILE

SUB-PROJECT TITLE(S):

INDICATOR(S) MEASURED:



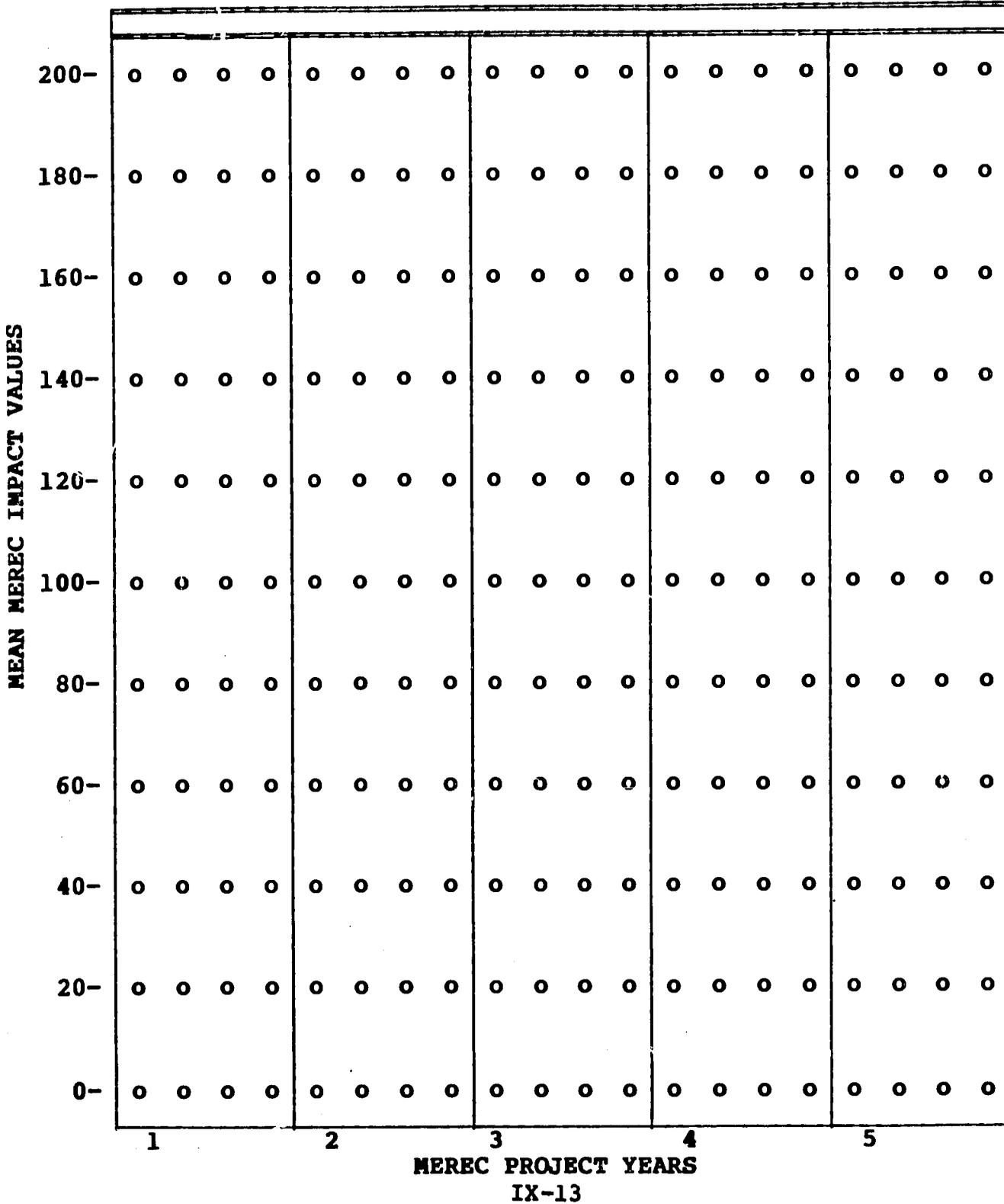
150

**FIGURE IX-5**

**MEREC RESOURCE INDICATOR SUMMARY VALUE PROFILE FORM**

**RESOURCE(S) :**

**INDICATOR(S) MEASURED:**



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**TABLE IX-4**

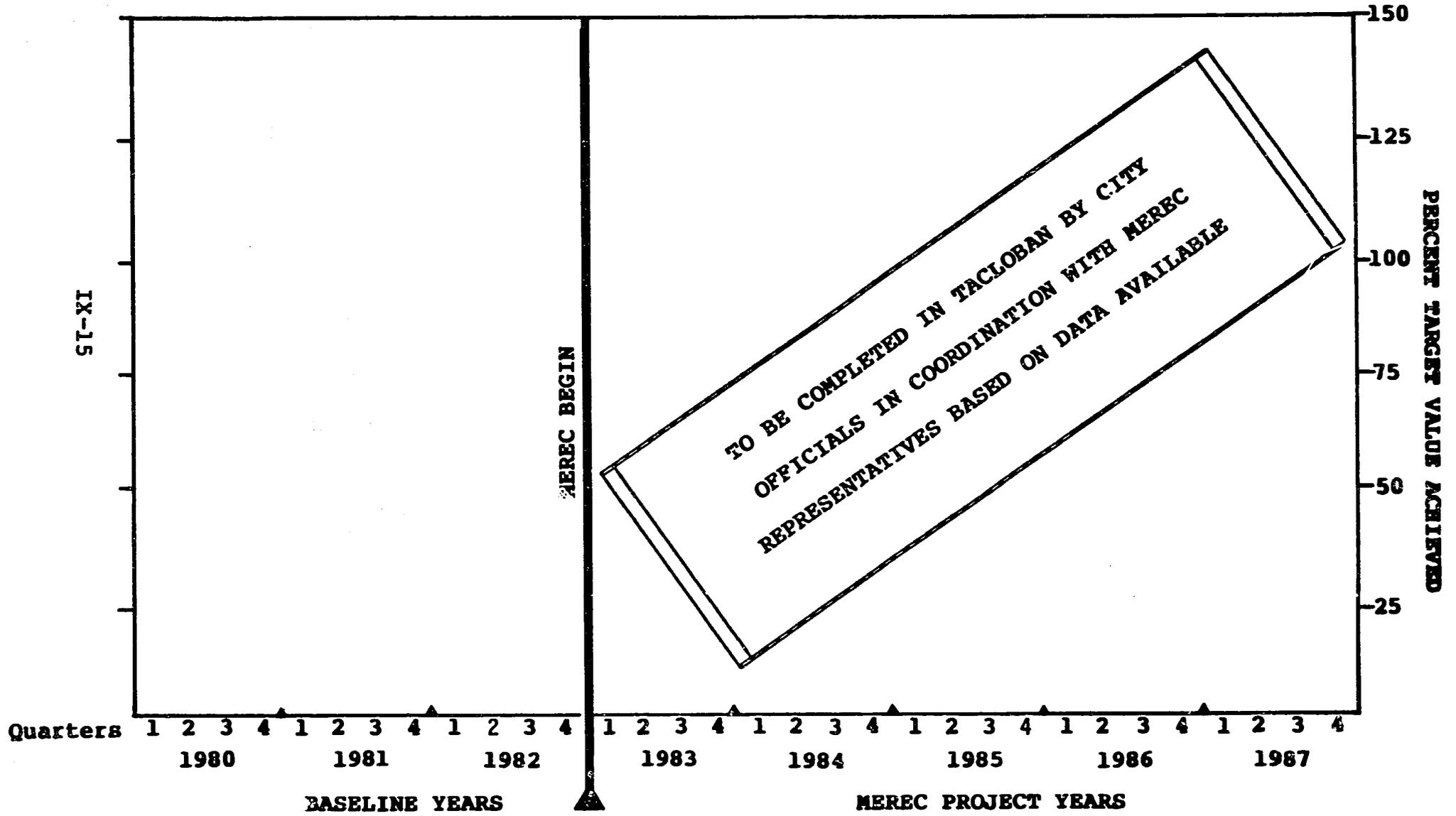
**MEREC SUB-PROJECT OVERVIEW FORM**

1	<b><u>SECTOR:</u></b> Water and Sewer: Resource Indicator
2	<b><u>SUB-PROJECT TITLE:</u></b> Water Sub-Project: Saving Water
3	<b><u>RESPONSIBLE OFFICIAL:</u></b> Engineer and General Manager: Ranulfo C. Feliciano Engineer: Apolonio Loteyro
4	<b><u>PRIMARY PURPOSE:</u></b> Reduce Unaccounted Water Losses
5	<b><u>MEASUREMENT INDICATOR:</u></b> Percent Reduction in Water Loss
6	<b><u>BEGIN BASELINE VALUE (BEV) OF INDICATOR: BEV =</u></b> To be Developed by Tacloban Officials in Coordination With MEREC Representatives
7	<b><u>MEREC BEGIN VALUE (MBV) OF INDICATOR: MBV =</u></b> To be Developed by Tacloban Officials in Coordination With MEREC Representatives
8	<b><u>DATA COLLECTION SOURCE:</u></b> Leyte Metropolitan Water District Office
9	<b><u>DATA COLLECTION METHOD:</u></b> To be Developed by Tacloban Officials in Coordination With MEREC Representatives
10	<b><u>PROJECTED TARGET INDICATOR VALUE (TIV): TIV =</u></b> To be Developed by Tacloban Officials in Coordination With MEREC Representatives
11	<b><u>PROJECT APPROACH:</u></b> <ol style="list-style-type: none"> <li>a. Account For Water Usage Through Elimination of Illegal Connections</li> <li>b. Reduce Leakages</li> <li>c. Recalibrate and Correct Meters at Source And in Reservoirs</li> <li>d. Minimize Water Wastage Through Fire Hydrants</li> <li>e. Correct Incorrect Home Meters</li> <li>f. Intensify Education and Information Campaigns to Encourage Efficient Water Usage</li> <li>g. Obtain Data and Compute to Determine Percent Reduction of Wastage</li> <li>h. Make Entries Into MEREC Indicator Achievement Register Form (Table IX-3)</li> </ol>

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FIGURE IX-6

MEREC IMPACT INDICATOR DEFINITION CHART  
TACLOBAN CITY



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TABLE IX-5

MEREC INDICATOR DATA COLLECTION SUMMARY FORM

SECTOR: WATER AND SEWER

SUB-PROJECT INDICATOR: Reduction in Water Loss Between Source and Meters by 50 Percent

MEASUREMENT METHOD:

Obtain Data Monthly From Leyte Metropolitan Water District as to Difference in Percent Water Saved Based on Current Total Water Supplies

FREQUENCY OF DATA PICK-UP:

Monthly

LOCATION(S):

Leyte Metropolitan Water District Office

DATA ORGANIZATION:

1. Use of MEREC Achievement Register Form (Table IX-3)
2. Enter Quarterly in MEREC Sub-Project Impact Value Profile (Figure IX-3)
3. Enter Quarterly in MEREC Resource Indicator Summary Value Profile Form in Mayor's Office (Figure IX-4)

DATA COMPUTATION:

1. Quarterly Average of Monthly Results for Entry in MEREC Indicator Achievement Register Form (Table IX-3)
2. Annual Average Every Four Quarters For Entry in MEREC Indicator Achievement Register Form (Table IX-3)

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**TABLE IX-6(a)**

**NEREC INDICATOR ACHIEVEMENT REGISTER**

Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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TABLE IX-6(b)

NEREC INDICATOR ACHIEVEMENT REGISTER

Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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TABLE IX-6(c)

HEREC INDICATOR ACHIEVEMENT REGISTER

Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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1991

TABLE IX-6(d)

MEREC INDICATOR ACHIEVEMENT REGISTER

Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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TABLE IX-6(e)

**NEREC INDICATOR ACHIEVEMENT REGISTER**

Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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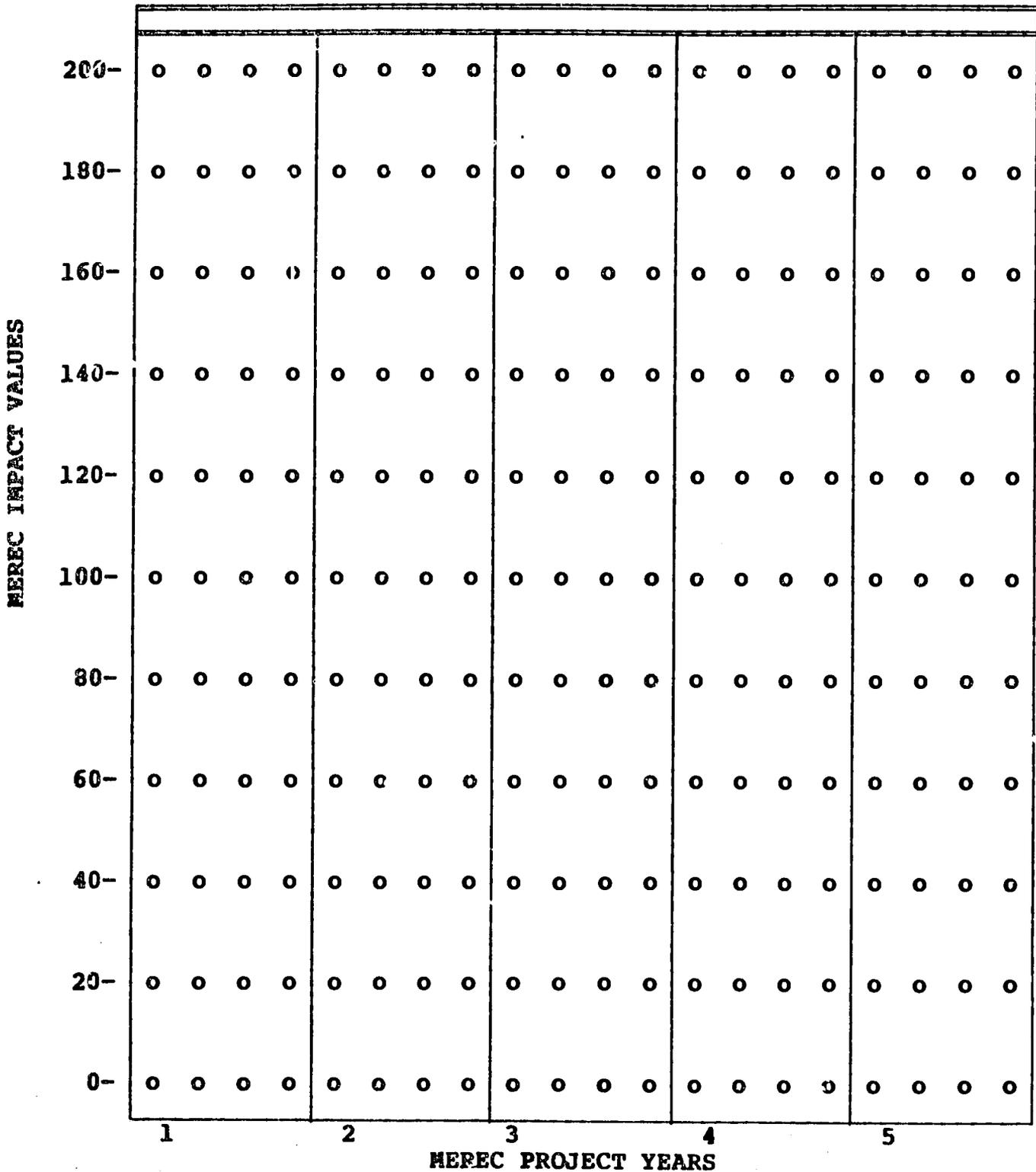
159

FIGURE IX-7

MEREC SUB-PROJECT IMPACT VALUE PROFILE

SUB-PROJECT TITLE(S):

INDICATOR(S) MEASURED:



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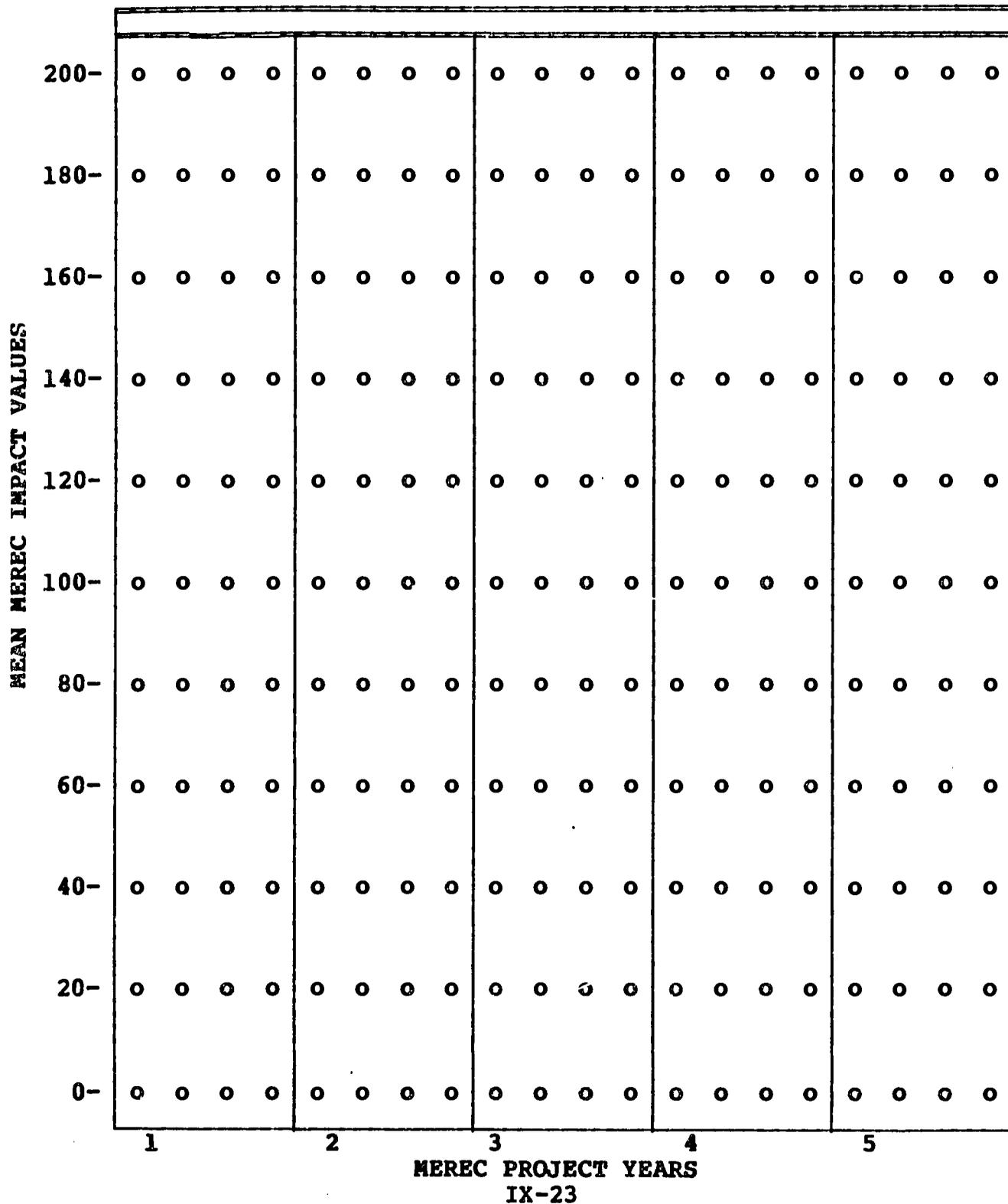
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FIGURE IX-8

MEREC RESOURCE INDICATOR SUMMARY VALUE PROFILE FORM

RESOURCE(S) :

INDICATOR(S) MEASURED:



## **CAVEATS AND INTERPRETATIONS: WATER AND SEWER SECTOR**

### **Water Loss Reduction:**

The reduction in water loss should be fairly straightforward. The problem is to locate, repair, and correct leaking pipes and valves and other equipment that may be malfunctioning. Based on the known problems, attainment of the target value of 50 percent reduction in waste appears reasonable. However, it is probable that over the course of the MEREC years, additional wastage factors can be expected to develop; new malfunctions can be expected while existing malfunctions are corrected. In the event the new malfunctions are limited in size and number, the 50 percent reduction in wastage also appears attainable. Of course, such unforeseeable events as earthquakes and other disasters that may cause ruptures and breaks must be factored in should they occur during the life of the project. Major problems involving system breakdown, loss of key personnel, and unexpected increases and/or decreases in the budget would also substantially affect whether or not water losses will be reduced to the targetted level. However, it is probable that a sustained effort by the City, stimulated by the MEREC project, will produce fruit in the form of a reduction in water loss.

### **Land Drain:**

Drainage of land in Tacloban will increase the stock of land available for commercial and residential use. An increase in value from a swampy waterlogged area to a dry area which provides sewage disposal and other amenities will be attractive and should lead to increases in land value. The essential questions here are:

- o How much will the land value be increased?
- o What will be the rate of increase over time allotted to MEREC?

Both these questions involve prognostication of events over which there is little control. The best estimates are those increases in value due to MEREC which are consistent with drainage which took place in the absence of MEREC. However, the value of land, once drained, depends on such factors as:

- o Access to roads
- o Closeness to the residential and business communities

- o Distance from airport and other public carriers
- o General economic conditions in the Province and Country as a whole
- o Availability of labor, technicians, and managers
- o Zoning regulations in the area
- o Value of nearby land and property
- o Predictions of future land value

# *CHAPTER X*

**CHAPTER X**

**SECTOR:** Waste Management

**SUB-PROJECT:** Centralized Containers

**FIGURE X-1(a)**

**SECTOR COMPLETION REQUIREMENTS FORM**

**A. COORDINATION TASKS REMAINING**

1. MEREC Sector Overview Form
2. MEREC Sub-Project Overview Form
3. MEREC Impact Indicator Definition Chart
4. MEREC Indicator Data Collection Summary Form
5. MEREC Indicator Achievement Register

*	Submitted	To Com
	X	
	X	
	X	
	X	

**B. COMPLETION NOTES**

- |     |   |
|-----|---|
| A-1 | Information Submitted   |
| A-2 | Information Submitted   |
| A-3 | Information Submitted   |
| A-4 | Information Submitted   |
| A-5 | Quarterly Information Submitted, Except for 1987; Needs Monthly Entries |

\* Submitted: Tacloban officials review information with representatives and make changes based on b available Tacloban information consistent w MEREC project objectives.

\*\* To be Completed: Review existing information in Tacloban and working with MEREC representatives supply m data and/or entries as required to meet MER objectives.

**CHAPTER X**

**SECTOR:** Waste Management

**SUB-PROJECT:** Push Cart

**FIGURE X-1(b)**

**SECTOR COMPLETION REQUIREMENTS FORM**

**A. COORDINATION TASKS REMAINING**

1. MEREC Sector Overview Form
2. MEREC Sub-Project Overview Form
3. MEREC Impact Indicator Definition Chart
4. MEREC Indicator Data Collection Summary Form
5. MEREC Indicator Achievement Register

* Submitted	To be ** Completed
X	
X	
X	
X	
	X

**B. COMPLETION NOTES**

- A-1 Information Submitted
- A-2 Information Submitted
- A-3 Information Submitted
- A-4 Information Submitted
- A-5 Quarterly Information Submitted; Requires Monthly Entries

\* Submitted: Tacloban officials review information with MEREC representatives and make changes based on best available Tacloban information consistent with MEREC project objectives.

\*\* To be Completed: Review existing information in Tacloban and working with MEREC representatives supply missing data and/or entries as required to meet MEREC objectives.

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**FIGURE X-2**

**MEREC SECTOR OVERVIEW FORM**

<b>WASTE MANAGEMENT: Resource Indicator</b>		
<b>SECTOR PURPOSE:</b> To Increase Cost Effectiveness of Collection and Disposal of Solid Wastes in Commercial Areas		
<b>COORDINATING SECTORS:</b> Transportation, Land Use, Water and Sewer, Housing, and Education and Training		
<b>SECTOR PRIMARY OBJECTIVE:</b> To Improve Cost Effectiveness and Hygiene Involved in Collection and Disposal of Solid Wastes		
<b>M E R E C   S U B - P R O J E C T S</b>		
<p style="text-align: center;"><b><u>SUB-PROJECT #1</u></b></p> <p><b>TITLE:</b> Centralized Collection Containers in Ten Commercial Areas</p> <p><b>PRIMARY OBJECTIVE:</b> Improve Cost Effectiveness and Hygiene Involved in Solid Wastes Disposal</p> <p><b>INDICATOR:</b> Reduction in Cost of Collection and Disposal of Solid Wastes in Pesos Per Cubic Meter</p> <p><b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b> Savings of ₱4.6 Per Cubic Meter</p>	<p style="text-align: center;"><b><u>SUB-PROJECT #2</u></b></p> <p><b>TITLE:</b> Push Carts (For Collection of Solid Wastes)</p> <p><b>PRIMARY OBJECTIVE:</b> Reduce Fuel Consumption</p> <p><b>INDICATOR:</b> Savings in Fuel Consumption in Liters of Fuel Per Cubic Meter of Solid Waste Collected</p> <p><b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b> ₱0.73</p>	<p style="text-align: center;"><b><u>SUB-PROJECT #3</u></b></p> <p><b>TITLE:</b></p> <p><b>PRIMARY OBJECTIVE:</b></p> <p><b>INDICATOR:</b></p> <p><b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b></p>

X-3

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TABLE X-1

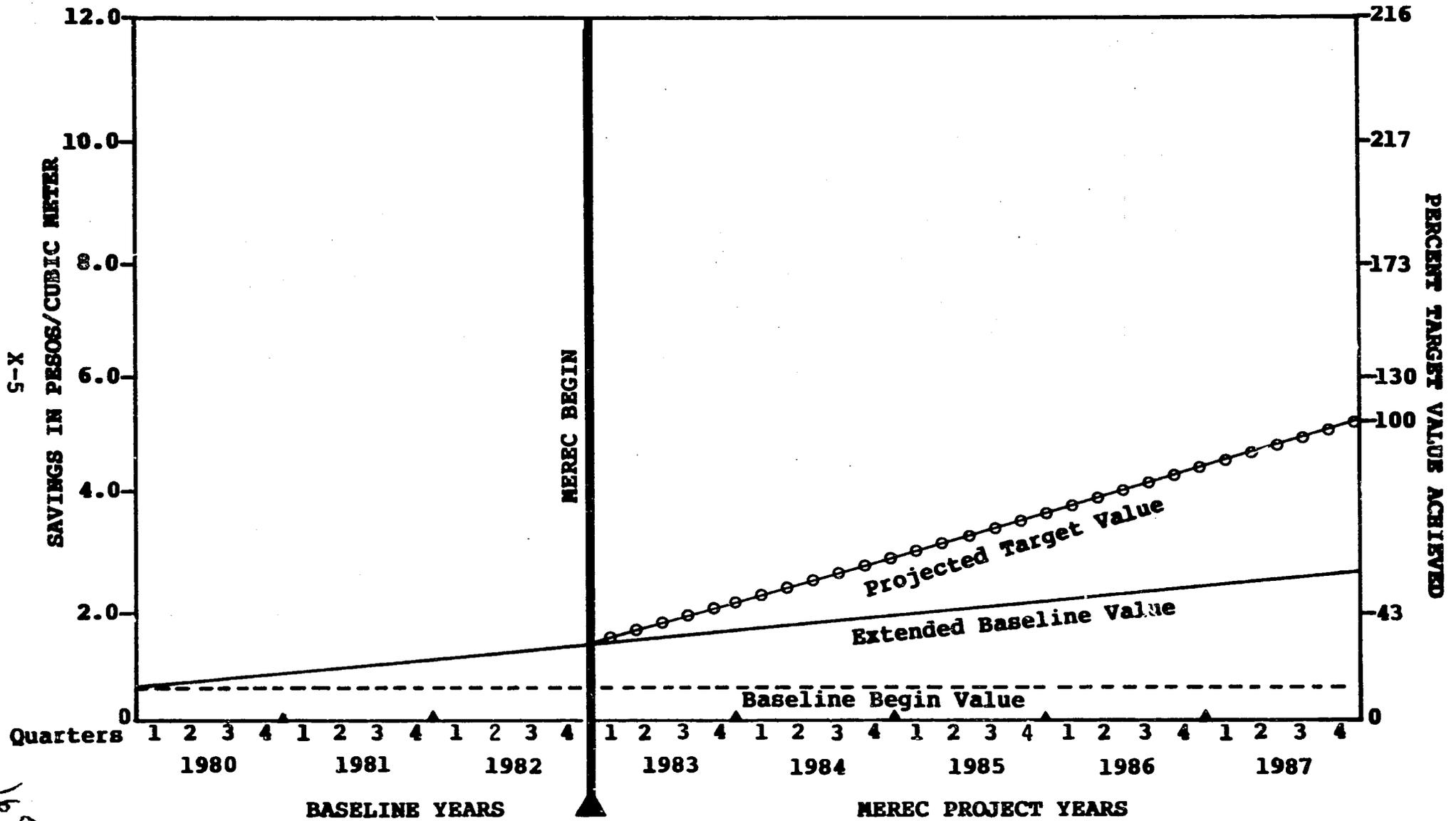
MEREC SUB-PROJECT OVERVIEW FORM

1	<b>SECTOR:</b> Waste Management: Resource Indicator
2	<b>SUB-PROJECT TITLE:</b> Centralized Collection Containers in Ten Commercial Areas
3	<b>RESPONSIBLE OFFICIAL:</b> Engineer: Crescensio F. Gonzales, Jr.
4	<b>PRIMARY PURPOSE:</b> Reduce Cost Effectiveness of Collection and Disposal of Solid Wastes
5	<b>MEASUREMENT INDICATOR:</b> Savings in Pesos Per Cubic Meter
6	<b>BEGIN BASELINE VALUE (BBV) OF INDICATOR:</b> BBV = ₱0.30
7	<b>MEREC BEGIN VALUE (MBV) OF INDICATOR:</b> MBV = ₱0.90
8	<b>DATA COLLECTION SOURCE:</b> Department of City General Services
9	<b>DATA COLLECTION METHOD:</b> Monthly Summaries of Savings Per Cubic Meter
10	<b>PROJECTED TARGET INDICATOR VALUE (TIV):</b> TIV = ₱4.6
11	<b>PROJECT APPROACH:</b> <ul style="list-style-type: none"> <li>a. Ten Centralized Containers for Solid Waste Deposits Will Be Placed at Stratagic Places in City</li> <li>b. Residents and Owners of Establishments Will Deposit Their Garbage or Waste in Containers Rather Than Dumping Elsewhere</li> <li>c. Containers Will be Emptied Every Day</li> <li>d. Based on Evidence of Success, Ten (10) Additional Containers Per Year Will be Deployed in The Succeeding Four Years of The Project</li> </ul>

FIGURE X-3

MEREC IMPACT INDICATOR DEFINITION CHART  
TACLOBAN CITY

WASTE MANAGEMENT SECTOR  
CENTRALIZED CONTAINERS



**TABLE X-2**

**MEREC INDICATOR DATA COLLECTION SUMMARY FORM**

<b>SECTOR:</b> WASTE MANAGEMENT	<b>SUB-PROJECT INDICATOR:</b> Savings in Pesos Per Cubic Meter
<b><u>MEASUREMENT METHOD:</u></b> 1. Obtain Data Monthly From City General Services Office Covering Locations in Which Containers Are Placed 2. Develop and Calculate Data Based on Cost Per Cubic Meter	
<b><u>FREQUENCY OF DATA PICK-UP:</u></b>  Monthly	
<b><u>LOCATION(S):</u></b>  Ten (10) Commercial Areas Selected By Waste Management Officials in Coordination With MEREC Representatives	
<b><u>DATA ORGANIZATION:</u></b> 1. Use of MEREC Achievement Register Form (Table X-3) 2. Enter Quarterly in MEREC Sub-Project Impact Value Profile (Figure X-3) 3. Enter Quarterly in MEREC Resource Indicator Summary Value Profile Form in Mayor's Office (Figure X-4)	
<b><u>DATA COMPUTATION:</u></b> 1. Quarterly Average of Monthly Results for Entry in MEREC Indicator Achievement Register Form (Table X-3) 2. Annual Average Every Four Quarters for Entry in MEREC Indicator Achievement Register Form (Table X-3)	

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TABLE X-3(a)

MEREC INDICATOR ACHIEVEMENT REGISTER

1983 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.								
2	Feb.								
3	March								
Q1		0.90		1.20					
4	April								
5	May								
6	June								
Q2		1.00		1.40					
7	July								
8	Aug.								
9	Sept.								
Q3		1.05		1.70					
10	Oct.								
11	Nov.								
12	Dec.								
Q4		1.10		1.90					
ANNUAL SUMMARY									

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TABLE X-3(b)

MEREC INDICATOR ACHIEVEMENT REGISTER

1984 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.								
2	Feb.								
3	March								
Q1		1.15		2.25					
4	April								
5	May								
6	June								
Q2		1.20		2.50					
7	July								
8	Aug.								
9	Sept.								
Q3		1.25		2.75					
10	Oct.								
11	Nov.								
12	Dec.								
Q4		1.30		3.00					
ANNUAL SUMMARY									

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**TABLE X-3(c)**

**MEREC INDICATOR ACHIEVEMENT REGISTER**

1985 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.								
2	Feb.								
3	March								
Q1		1.35		3.30					
4	April								
5	May								
6	June								
Q2		1.40		3.50					
7	July								
8	Aug.								
9	Sept.								
Q3		1.45		3.95					
10	Oct.								
11	Nov.								
12	Dec.								
Q4		1.50		4.05					
ANNUAL SUMMARY									

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1.1

TABLE X-3(d)

MEREC INDICATOR ACHIEVEMENT REGISTER

1986 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.								
2	Feb.								
3	March								
Q1		1.505		4.25					
4	April								
5	May								
6	June								
Q2		1.510		4.60					
7	July								
8	Aug.								
9	Sept.								
Q3		1.515		4.80					
10	Oct.								
11	Nov.								
12	Dec.								
Q4		1.520		5.20					
ANNUAL SUMMARY									

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TABLE X-3(e)

**MEREC INDICATOR ACHIEVEMENT REGISTER**

1987 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTY)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTY}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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FIGURE X-4

MEREC SUB-PROJECT IMPACT VALUE PROFILE

SUB-PROJECT TITLE(S):

INDICATOR(S) MEASURED:

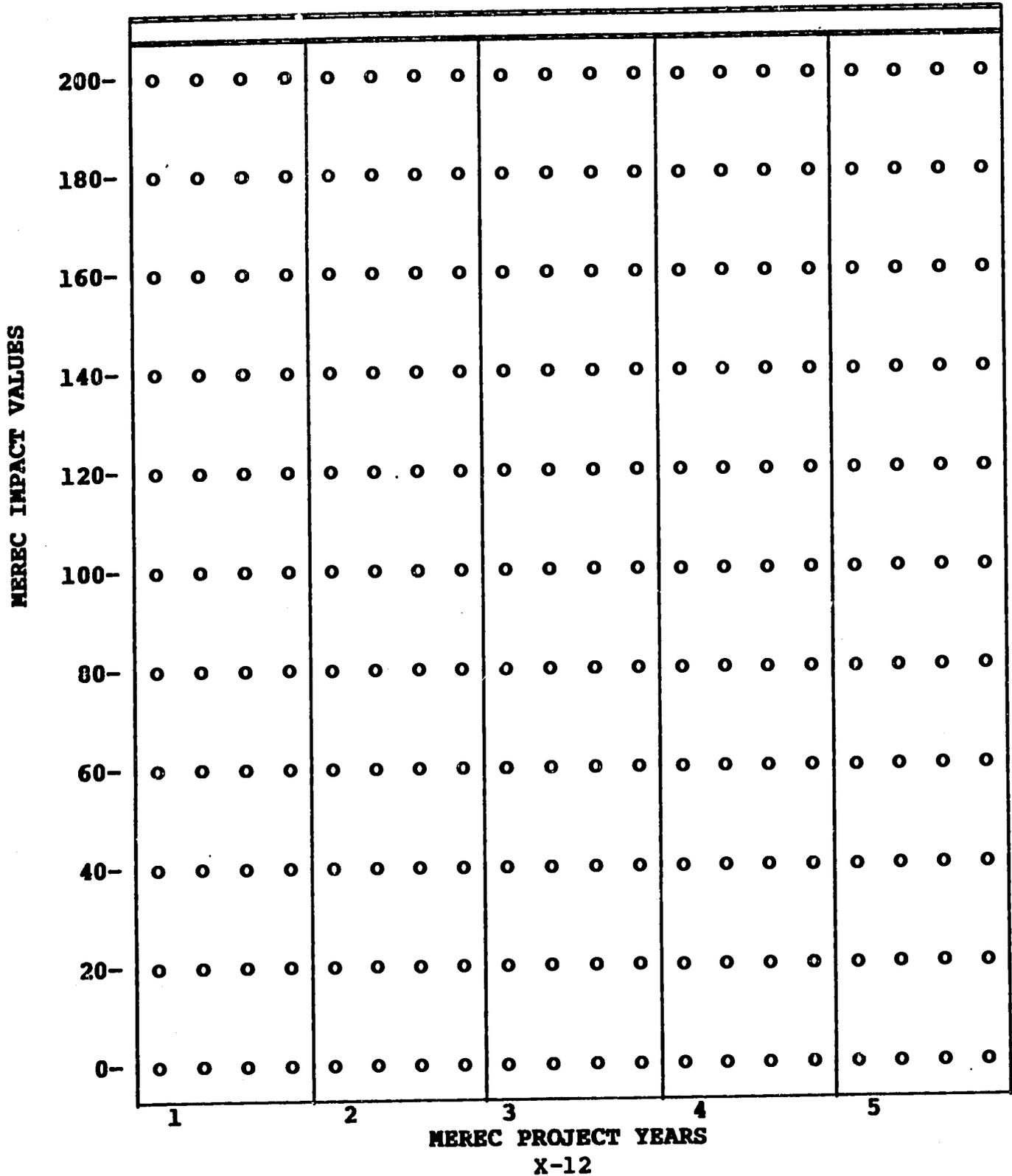


FIGURE X-5

MEREC RESOURCE INDICATOR SUMMARY VALUE PROFILE FORM

RESOURCE(S):

INDICATOR(S) MEASURED:

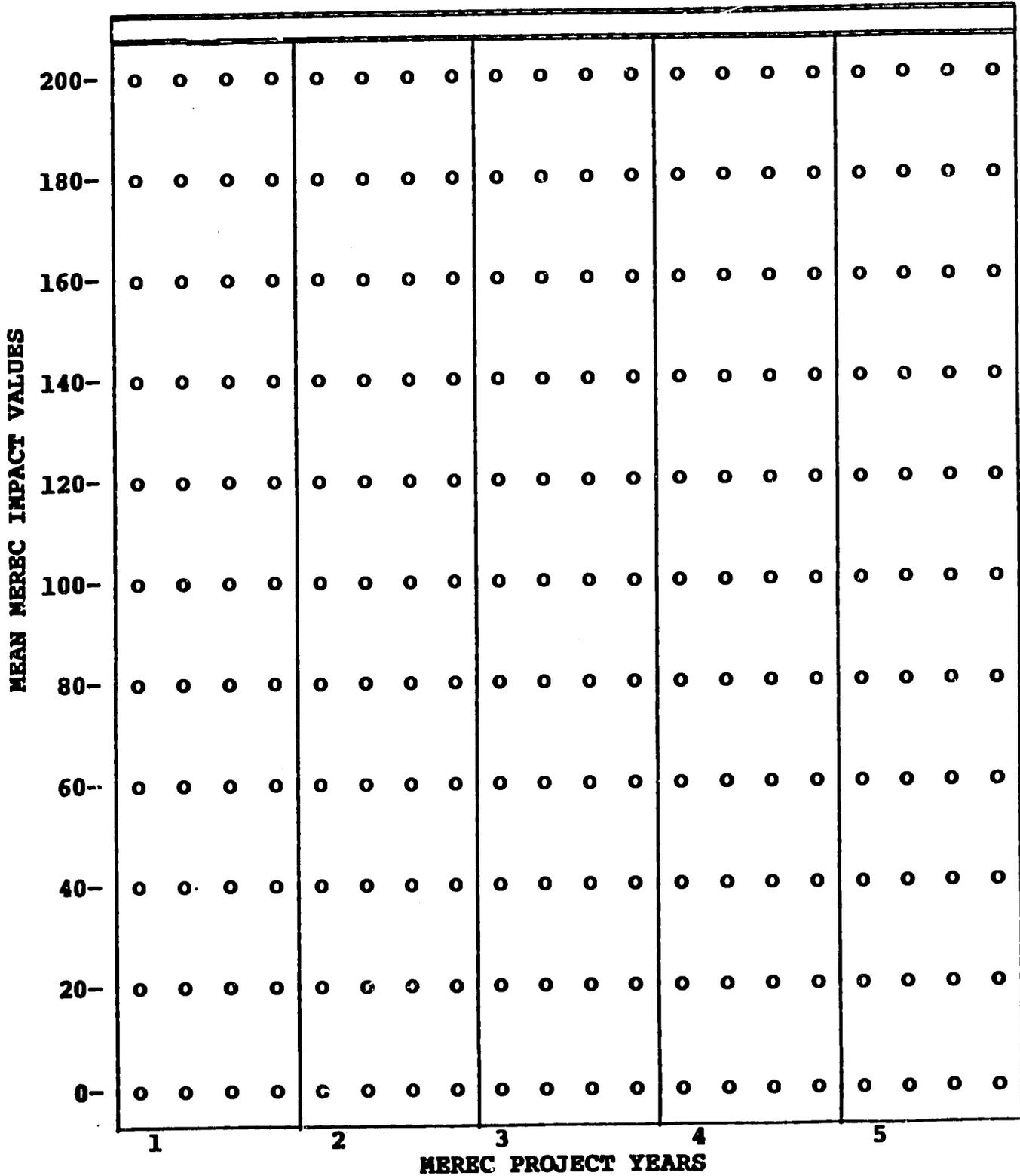


TABLE X-4

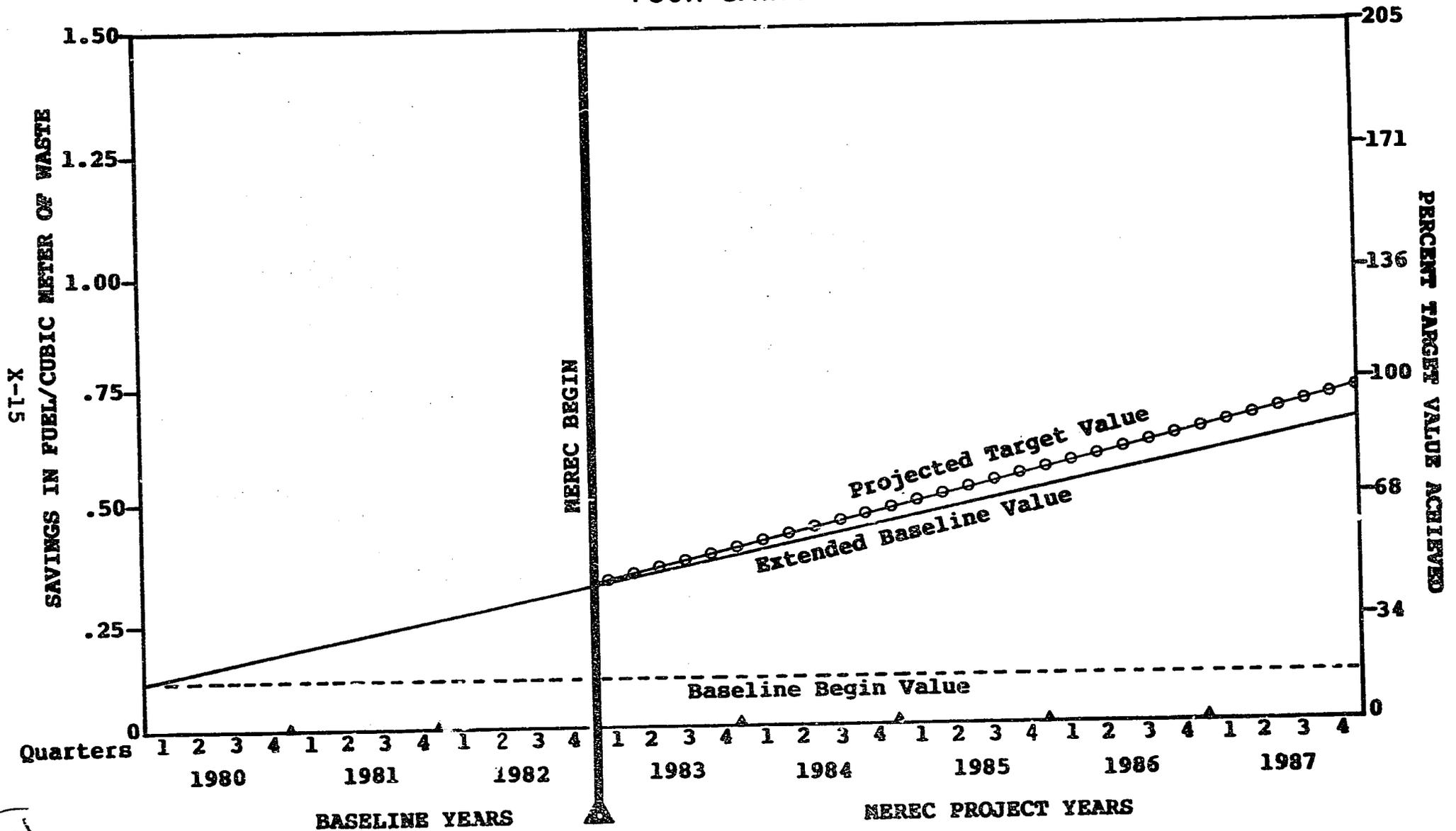
NEREC SUB-PROJECT OVERVIEW FORM

1	<b>SECTOR:</b> Waste Management: Resource Indicator
2	<b>SUB-PROJECT TITLE:</b> Push Cart
3	<b>RESPONSIBLE OFFICIAL:</b> Engineer and Public Service Officer: Crescensio F. Gonzales, Jr.
4	<b>PRIMARY PURPOSE:</b> Reduce Fuel Consumption
5	<b>MEASUREMENT INDICATOR:</b> Change in Fuel Consumption in Liters Per Cubic Meter of Solid Waste Collected
6	<b>BEGIN BASELINE VALUE (BBV) OF INDICATOR:</b> BBV = ₱0.10
7	<b>NEREC BEGIN VALUE (MBV) OF INDICATOR:</b> MBV = ₱0.31
8	<b>DATA COLLECTION SOURCE:</b> Department of City General Services
9	<b>DATA COLLECTION METHOD:</b> Monthly Summaries
10	<b>PROJECTED TARGET INDICATOR VALUE (TIV):</b> TIV = ₱0.73
11	<b>PROJECT APPROACH:</b> <ul style="list-style-type: none"> <li>a. Five Pushcarts Each With a Capacity of 1 Cubic Meter Will be Added for Collection and Disposal of Solid Wastes</li> <li>b. Each Pushcart Will be Manned With Two Laborers With The Goal of Collection and Disposal of 2 Cubic Meters of Solid Wastes Per Day</li> <li>c. After a Year Demonstration an Additional 5 Pushcarts Per Year Will be Added for a Period of 5 Years</li> <li>d. Based on Success During The First Year, An Additional 5 Pushcarts Per Year Will be Added to The Waste Collection System</li> </ul>

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FIGURE X-6

MEREC IMPACT INDICATOR DEFINITION CHART  
 TACLOBAN CITY  
 WASTE MANAGEMENT SECTOR  
 PUSH CARTS



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**TABLE X-5**

**MEREC INDICATOR DATA COLLECTION SUMMARY FORM**

<b>SECTOR:</b> WASTE MANAGEMENT	<b>SUB-PROJECT INDICATOR:</b> Savings in Fuel Per Cubic Meter of Solid Waste Collected
<b><u>MEASUREMENT METHOD:</u></b>  Obtain Data Monthly From City General Services Office Based on Savings in Fuel Derived From Use of Pushcarts	
<b><u>FREQUENCY OF DATA PICK-UP:</u></b>  Monthly	
<b><u>LOCATION(S):</u></b>  Department of City General Services Office	
<b><u>DATA ORGANIZATION:</u></b>  1. Use of MEREC Achievement Register Form (Table X-6)  2. Enter Quarterly in MEREC Sub-Project Impace Value Profile (Figure X-7)  2. Enter Quarterly in MEREC Resouece Indicator Summary Value Profile Form in Mayor's Office (Figure X-8)	
<b><u>DATA COMPUTATION:</u></b>  1. Quarterly Average of Monthly Results for Entry in MEREC Achievement Register Form (Table X-6)  2. Annual Average Every Four Quarters for Entry in MEREC Achievement Register Form (Table X-6)	

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**TABLE X-6(a)**

**MEREC INDICATOR ACHIEVEMENT REGISTER**

1983 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.								
2	Feb.								
3	March								
Q1		0.330		0.350					
4	April								
5	May								
6	June								
Q2		0.345		0.375					
7	July								
8	Aug.								
9	Sept.								
Q3		0.360		0.410					
10	Oct.								
11	Nov.								
12	Dec.								
Q4		0.375		0.450					
ANNUAL SUMMARY									

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TABLE X-6(b)

NEREC INDICATOR ACHIEVEMENT REGISTER

1984 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.								
2	Feb.								
3	March								
Q1		0.400		0.490					
4	April								
5	May								
6	June								
Q2		0.410		0.510					
7	July								
8	Aug.								
9	Sept.								
Q3		0.425		0.550					
10	Oct.								
11	Nov.								
12	Dec.								
Q4		0.445		0.580					
ANNUAL SUMMARY									

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TABLE X-6(c)

MEREC INDICATOR ACHIEVEMENT REGISTER

1985 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.								
2	Feb.								
3	March								
Q1		0.460		0.610					
4	April								
5	May								
6	June								
Q2		0.475		0.650					
7	July								
8	Aug.								
9	Sept.								
Q3		0.500		0.675					
10	Oct.								
11	Nov.								
12	Dec.								
Q4		0.515		0.715					
ANNUAL SUMMARY									

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TABLE X-6(d)

MEREC INDICATOR ACHIEVEMENT REGISTER

1986 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.								
2	Feb.								
3	March								
Q1		0.530		0.750					
4	April								
5	May								
6	June								
Q2		0.550		0.775					
7	July								
8	Aug.								
9	Sept.								
Q3		0.560		0.810					
10	Oct.								
11	Nov.								
12	Dec.								
Q4		0.580		0.940					
ANNUAL SUMMARY									

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TABLE X-6(e)

MEREC INDICATOR ACHIEVEMENT REGISTER

1987 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.								
2	Feb.								
3	March								
Q1		0.600		0.875					
4	April								
5	May								
6	June								
Q2		0.620		0.910					
7	July								
8	Aug.								
9	Sept.								
Q3		0.630		0.945					
10	Oct.								
11	Nov.								
12	Dec.								
Q4		0.650		0.980					
ANNUAL SUMMARY									

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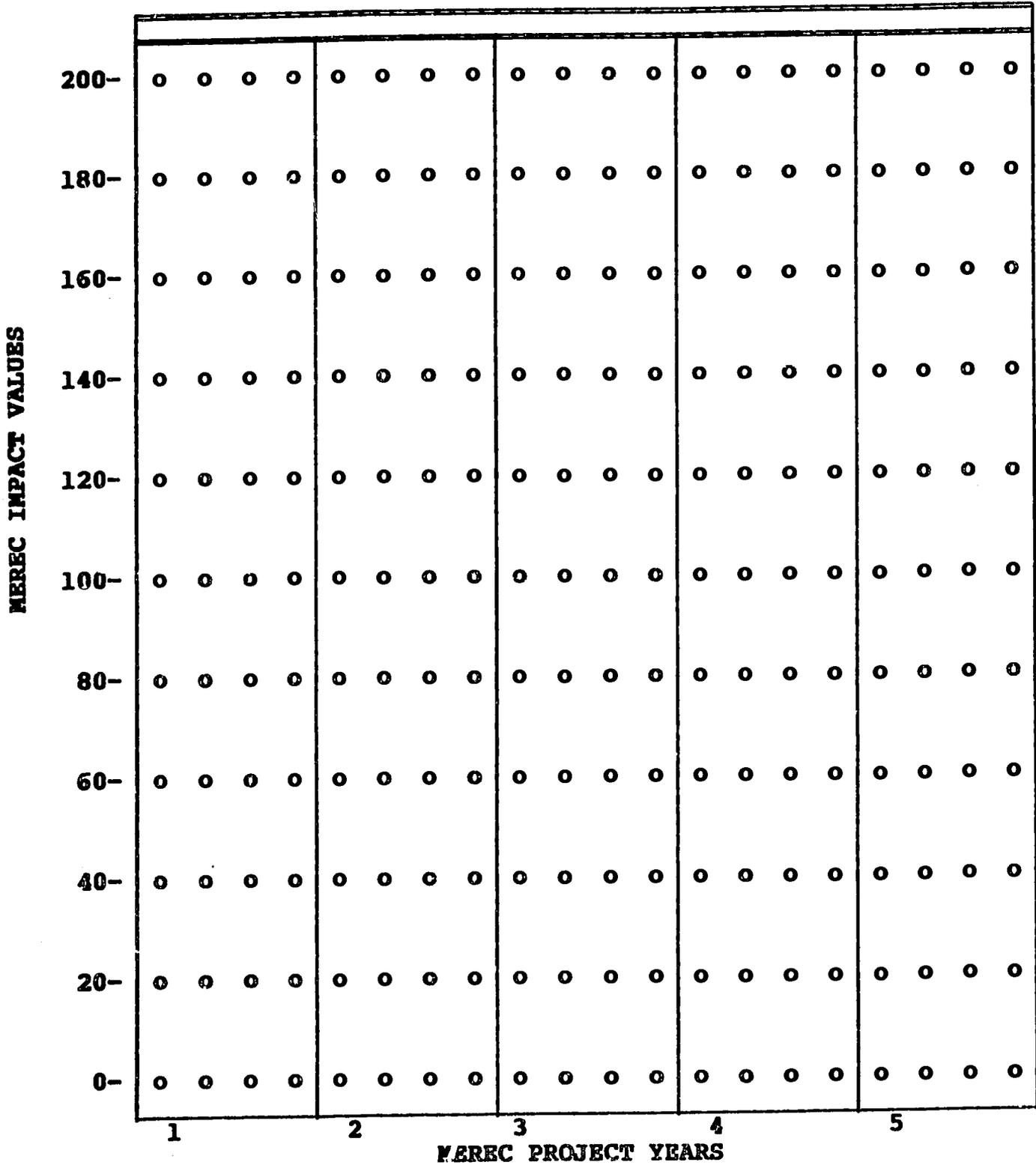
184

FIGURE X-7

MEREC SUB-PROJECT IMPACT VALUE PROFILE

SUB-PROJECT TITLE(S) :

INDICATOR(S) MEASURED :



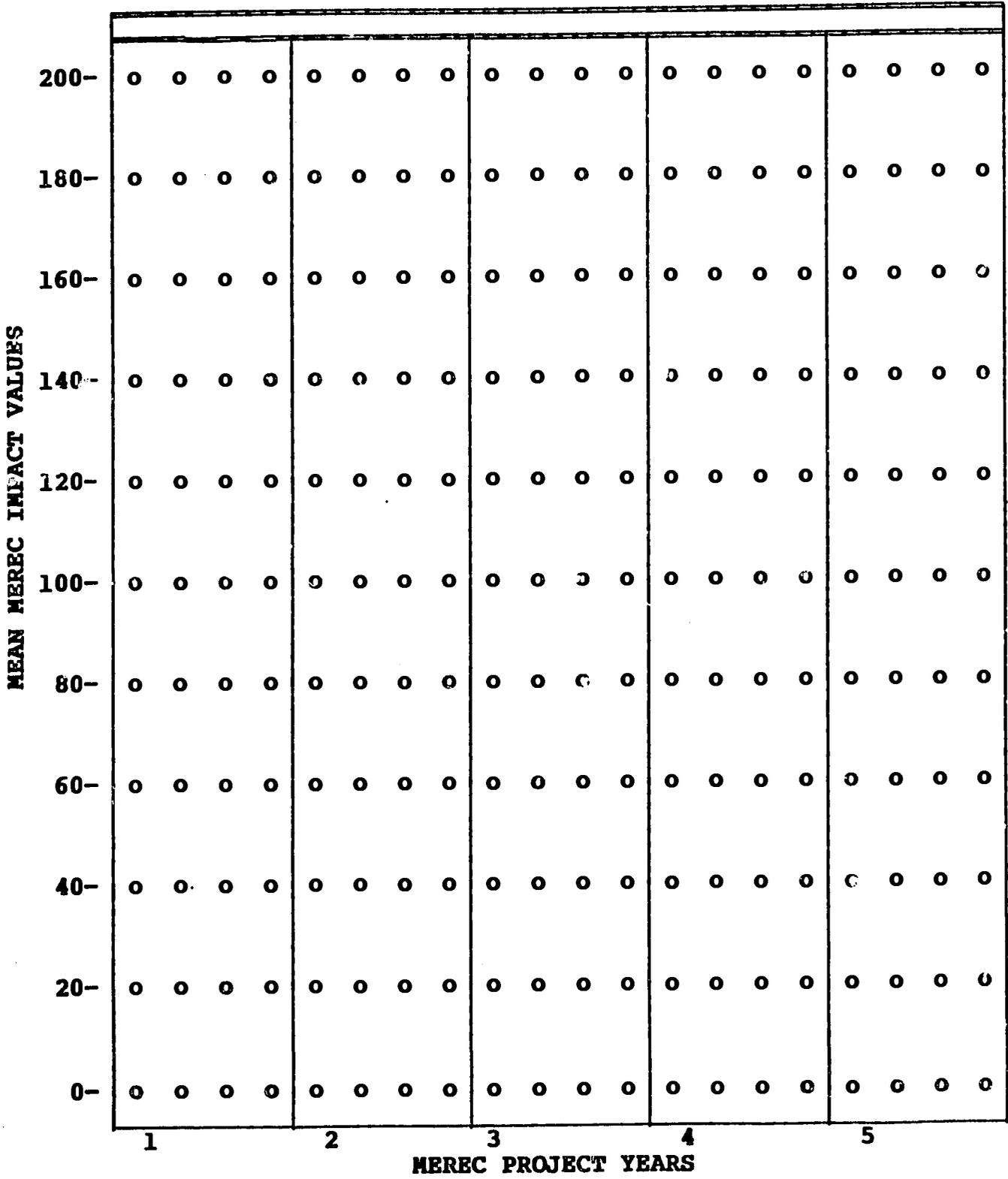
125

FIGURE X-8

MEREC RESOURCE INDICATOR SUMMARY VALUE PROFILE FORM

RESOURCE(S):

INDICATOR(S) MEASURED:



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## CAVEATS AND INTERPRETATIONS: WASTE MANAGEMENT SECTION

The savings in fuel consumption projected through the use of waste containers and waste pick-up push carts presupposes that:

- Families will use the waste containers for household waste and therefore the garbage trucks will make appreciably fewer stop-and-go trips, as there will be fewer houses with waste to be picked up.
- The waste pick-up push carts will be manned by city employees who will pick up substantial amounts of waste each day.

This waste would then be deposited at waste disposal sites, thus reducing the fuel expended by garbage trucks and the constant stop-and-go trips involved in waste pick-up on a house-by-house basis.

Projected fuel reductions will be overstated if:

- City employees are late in filling up waste pick-up push carts.
- Citizens are careless about dropping their waste into the containers.
- There is a greater-than-anticipated increase in the overall amount of waste to be collected.

Conversely, project fuel savings will be increased if:

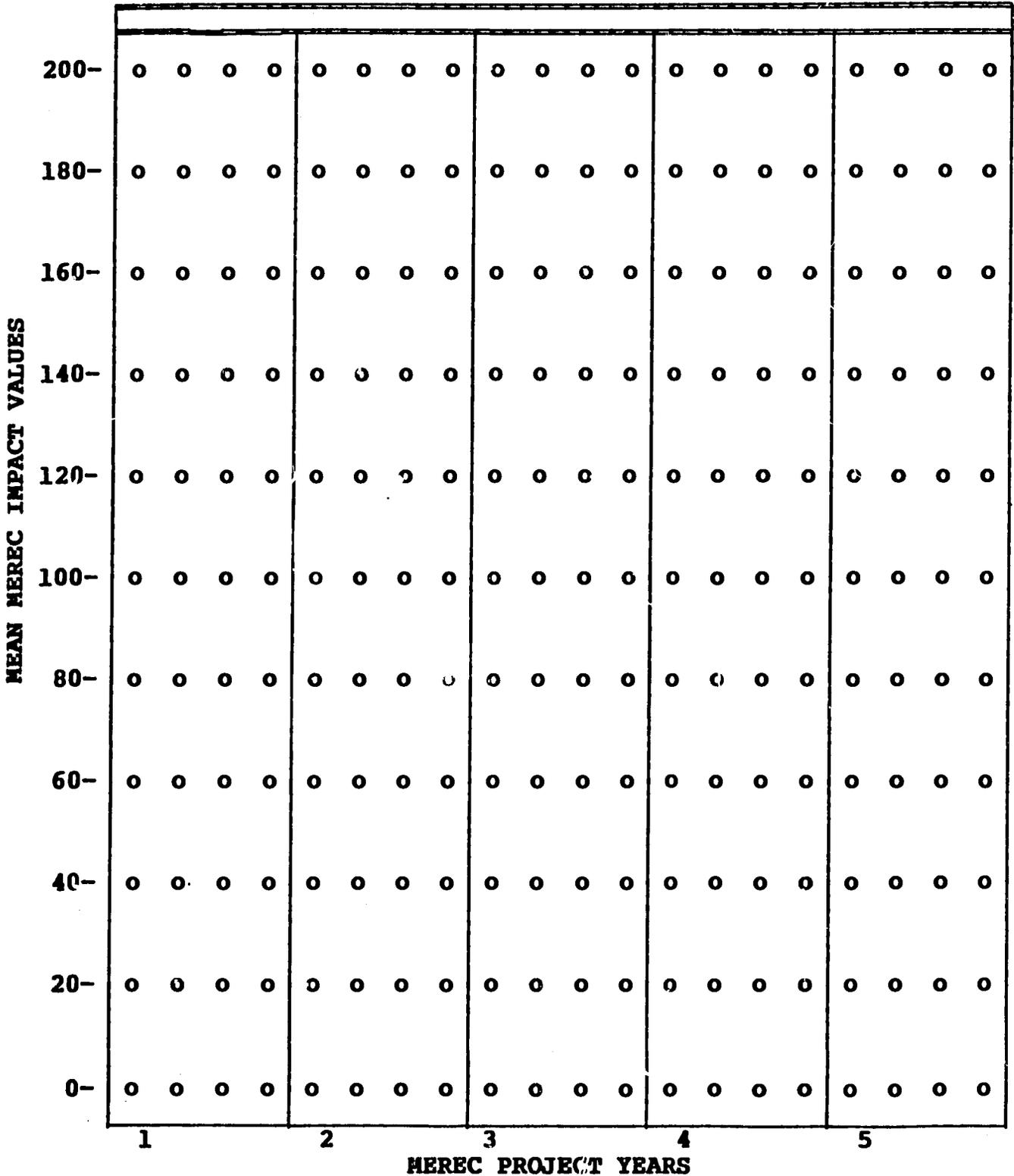
- Push cart employees are more conscientious and motivated than expected.
- Citizens fill waste containers in their neighborhood, and substantially reduce the requirement for house-to-house pick-up.
- There is a general reduction in the amount of waste to be picked up in the demonstration area.

FIGURE X-8

MEREC RESOURCE INDICATOR SUMMARY VALUE PROFILE FORM

RESOURCE(S) :

INDICATOR(S) MEASURED:



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# *CHAPTER XI*

**CHAPTER XI**

**SECTOR:** Transportation

**SUB-PROJECT:** Traffic Master Plan

**FIGURE XI-1**

**SECTOR COMPLETION REQUIREMENTS FORM**

**A. COORDINATION TASKS REMAINING**

1. MEREC Sector Overview Form
2. MEREC Sub-Project Overview Form
3. MEREC Impact Indicator Definition Chart
4. MEREC Indicator Data Collection Summary Form
5. MEREC Indicator Achievement Register

* Submitted	To be ** Completed
X	
X	
X	
X	
X	

**B. COMPLETION NOTES**

- A-1 

Information Submitted
-----------------------
- A-2 

Information Submitted
-----------------------
- A-3 

Information Submitted
-----------------------
- A-4 

Information Submitted
-----------------------
- A-5 

Information Submitted
-----------------------

\* Submitted: Tacloban officials review information with MEREC representatives and make changes based on best available Tacloban information consistent with MEREC project objectives.

\*\* To be Completed: Review existing information in Tacloban and working with MEREC representatives supply missing data and/or entries as required to meet MEREC objectives.

**FIGURE XI-2**

**MEREC SECTOR OVERVIEW FORM**

TRANSPORTATION: Resource Indicator		
<b>SECTOR PURPOSE:</b> To Improve Traffic Management Methods and Techniques, Use of Traffic Master Plan to Improve Transport, and Use of Traffic Training and Education Programs to Reduce Fuel Consumption		
<b>COORDINATING SECTORS:</b> Land Use, Water and Sewer, and Education and Training		
<b>SECTOR PRIMARY OBJECTIVE:</b> To Reduce Fuel Consumption for Various Categories of Vehicles (Private, For Hire, Public Utility, and Government Owned Vehicles, e.g., Light, Medium, Heavy, Utility, Trucks, Motorcycles, Tricycles, and School Buses)		
<b>M E R E C   S U B - P R O J E C T S</b>		
<b><u>SUB-PROJECT #1</u></b>	<b><u>SUB-PROJECT #2</u></b>	<b><u>SUB-PROJECT #3</u></b>
<b>TITLE:</b> Traffic Master Plan	<b>TITLE:</b>	<b>TITLE:</b>
<b>PRIMARY OBJECTIVE:</b> Reduce Fuel Consumption	<b>PRIMARY OBJECTIVE:</b>	<b>PRIMARY OBJECTIVE:</b>
<b>INDICATOR:</b> Fuel Savings in Millions of Liters (000 000)	<b>INDICATOR:</b>	<b>INDICATOR:</b>
<b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b> Not Yet Available; To be Developed by Tacloban Officials And MEREC Reps.	<b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b>	<b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b>

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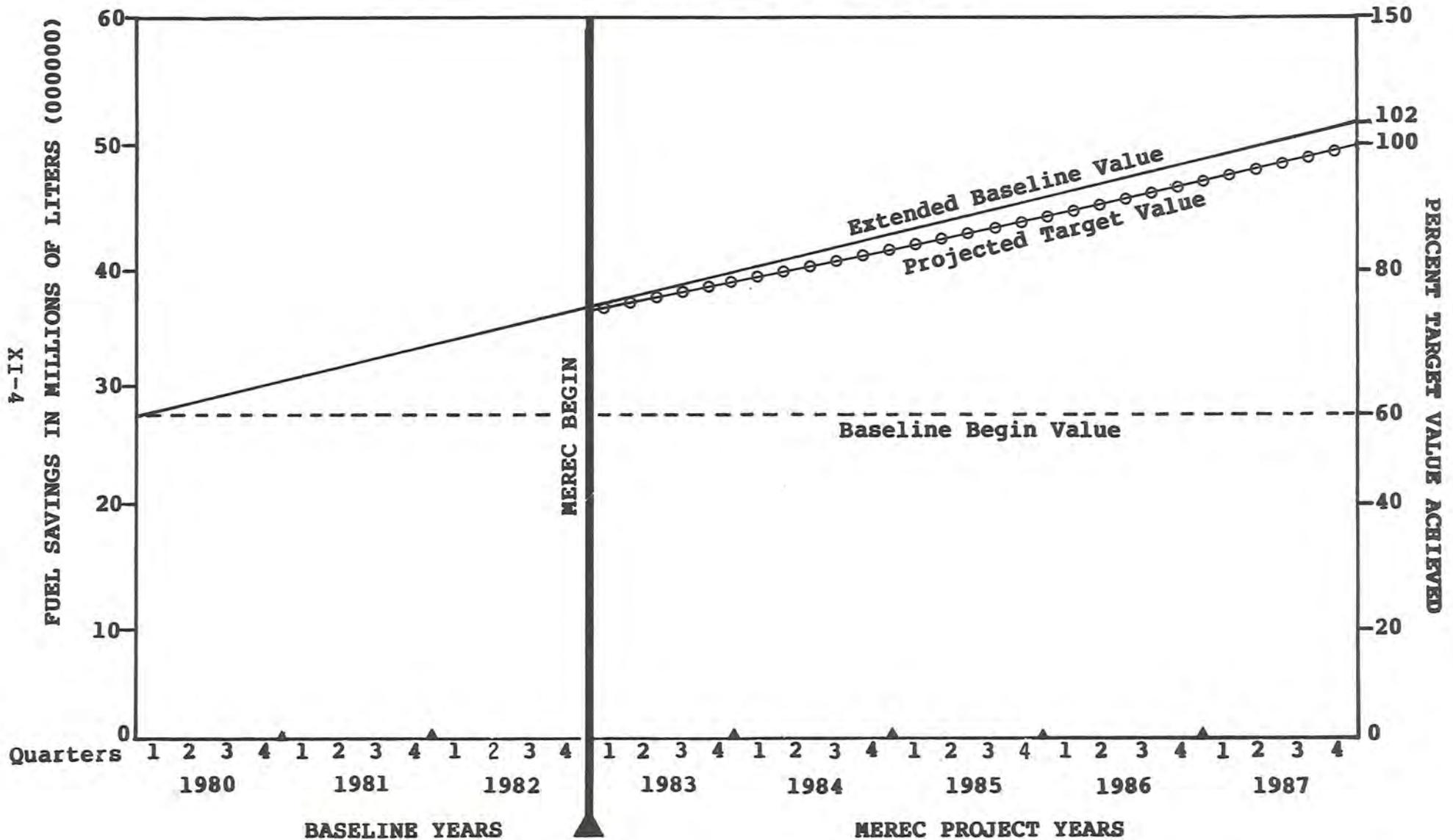
**TABLE XI-1**

**MEREC SUB-PROJECT OVERVIEW FORM**

1	<b><u>SECTOR:</u></b> Transportation: Resource Indicator
2	<b><u>SUB-PROJECT TITLE:</u></b> Traffic Master Plan
3	<b><u>RESPONSIBLE OFFICIAL:</u></b> Regional Director: Vicente E. Mate, Jr.
4	<b><u>PRIMARY PURPOSE:</u></b> Reduce Fuel Consumption by Type of Vehicle
5	<b><u>MEASUREMENT INDICATOR:</u></b> Fuel Savings in Millions of Liters
6	<b><u>BEGIN BASELINE VALUE (BBV) OF INDICATOR:</u></b> BBV = To be Recalculated by Tacloban Officials in Coordination With MEREC Representatives
7	<b><u>MEREC BEGIN VALUE (MBV) OF INDICATOR:</u></b> MBV = To be recalculated by Tacloban Officials in Coordination With MEREC Representatives
8	<b><u>DATA COLLECTION SOURCE:</u></b> Bureau of Land Transportation
9	<b><u>DATA COLLECTION METHOD:</u></b> To be Coordinated With Bureau of Land Transportation Officials
10	<b><u>PROJECTED TARGET INDICATOR VALUE (TIV):</u></b> TIV = To be Recalculated by Tacloban Officials in Coordination With MEREC Representatives
11	<b><u>PROJECT APPROACH:</u></b> <ul style="list-style-type: none"> <li>a. Set Goals and Objectives</li> <li>b. Prepare Scope of Work for Consultant</li> <li>c. Inventory of Existing Information and Data</li> <li>d. Prepare Study Design, Budget and Schedule</li> <li>e. Hire Support Personnel</li> <li>f. Collect, Tabulate, and Analyze Data</li> <li>g. Make Entries in MEREC indicator Achievement Register Form (Table XI-3)</li> </ul>

FIGURE XI-3

MEREC IMPACT INDICATOR DEFINITION CHART  
TACLOBAN CITY  
TRANSPORTATION SECTOR



**TABLE XI-2**

**MEREC INDICATOR DATA COLLECTION SUMMARY FORM**

SECTOR: TRANSPORTATION	SUB-PROJECT INDICATOR: Fuel Savings in Millions of Liters
<u>MEASUREMENT METHOD:</u> Data Routinely Supplied by Bureau Of Land Transportation Broken Out Into Fuel Savings in Millions of Liters by Type of Vehicles	
<u>FREQUENCY OF DATA PICK-UP:</u> Monthly	
<u>LOCATION(S):</u> Bureau of Land Transportation	
<u>DATA ORGANIZATION:</u> <ol style="list-style-type: none"><li>1. Use of MEREC Achievement Register Form (Table XI-3)</li><li>2. Enter Quarterly in MEREC Sub-Project Impace Value Profile (Figure XI-3)</li><li>3. Enter Quarterly in MEREC Resource Indicator Summary Value Profile Form in Mayor's Office (Figure XI-4)</li></ol>	
<u>DATA COMPUTATION:</u> <ol style="list-style-type: none"><li>1. Quarterly Average of Monthly Results for Entry in MEREC Achievement Register Form (Table XI-3)</li><li>2. Annual Average Every Four Quarters for Entry in MEREC Achievement Register Form (Table Xi-3)</li></ol>	

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TABLE XI-3(a)

MEREC INDICATOR ACHIEVEMENT REGISTER

1983 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	May	2,866,935	8%	3,511,996	10 %				
2	June	2,866,935	8	3,511,996	10				
3	July	2,866,935	8	2,809,596	8				
Q1									
4	Aug.	2,866,935	8	2,458,397	7				
5	Sept.	2,866,936	8	2,458,397	7				
6	Oct.	3,225,302	9	2,809,596	8				
Q2									
7	Nov.	3,583,669	10	3,508,483	9.99				
8	Dec.	5,375,503	15	4,214,395	12				
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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TABLE XI-3(b)

NEREC INDICATOR ACHIEVEMENT REGISTER

1984 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	2,315,767	6%	2,522,874	6.67%				
2	Feb.	2,315,767	6	2,522,874	6.67				
3	March	2,701,728	7	2,522,873	6.67				
Q1									
4	April	2,701,728	7	3,025,935	8				
5	May	3,087,690	8	3,782,419	10				
6	June	3,087,690	8	3,782,419	10				
Q2									
7	July	3,087,698	8	3,025,935	8				
8	Aug.	3,087,699	8	2,547,694	7				
9	Sept.	3,087,699	8	2,647,694	7				
Q3									
10	Oct.	3,473,651	9	3,025,936	8				
11	Nov.	3,859,611	10	3,778,637	9.99				
12	Dec.	5,789,417	15	4,538,903	12				
Q4									
ANNUAL SUMMARY									

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TABLE XI-3(c)

MEREC INDICATOR ACHIEVEMENT REGISTER

1985 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	2,494,081	6%	2,717,134	6.67%				
2	Feb.	2,494,081	6	2,717,134	6.67				
3	March	2,909,761	7	2,717,134	6.67				
Q1									
4	April	2,909,761	7	3,258,931	8				
5	May	3,325,441	8	4,073,664	10				
6	June	3,325,441	8	4,073,664	10				
Q2									
7	July	3,325,441	8	3,258,931	8				
8	Aug.	3,325,442	8	2,851,565	7				
9	Sept.	3,325,442	8	2,851,565	7				
Q3									
10	Oct.	3,741,122	9	3,258,932	8				
11	Nov.	4,156,801	10	4,069,590	9.99				
12	Dec.	6,235,202	15	4,888,397	12				
Q4									
ANNUAL SUMMARY									

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**TABLE XI-3(d)**

**MEREC INDICATOR ACHIEVEMENT REGISTER**

1986 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	2,686,125	6%	2,926,354	6.67%				
2	Feb.	2,686,125	6	2,926,354	6.67				
3	March	3,133,813	7	2,926,355	6.67				
Q1									
4	April	3,133,813	7	3,509,870	8				
5	May	3,581,500	8	4,387,338	10				
6	June	3,581,500	8	4,387,337	10				
Q2									
7	July	3,581,500	8	3,509,870	8				
8	Aug.	3,581,501	8	3,071,137	7				
9	Sept.	3,581,500	8	3,071,137	7				
Q3									
10	Oct.	4,029,188	9	3,509,871	8				
11	Nov.	4,476,875	10	4,382,950	9.99				
12	Dec.	6,715,313	15	5,264,805	12				
Q4									
ANNUAL SUMMARY									

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TABLE XI-3(e)

MEREC INDICATOR ACHIEVEMENT REGISTER

1987 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1	Jan.	2,892,957	5%	3,151,684	6.67%				
2	Feb.	2,892,957	6	3,151,684	6.67				
3	March	3,375,116	7	3,151,684	6.67				
Q1									
4	April	3,375,116	7	3,780,130	8				
5	May	3,857,276	8	4,725,163	10				
6	June	3,857,276	8	4,725,163	10				
Q2									
7	July	3,857,276	8	3,780,130	8				
8	Aug.	3,857,276	8	3,307,614	7				
9	Sept.	3,857,276	8	3,307,614	7				
Q3									
10	Oct.	4,339,435	9	3,780,130	8				
11	Nov.	4,821,594	10	4,720,437	9.99				
12	Dec.	7,232,392	15	5,670,195	12				
Q4									
ANNUAL SUMMARY									

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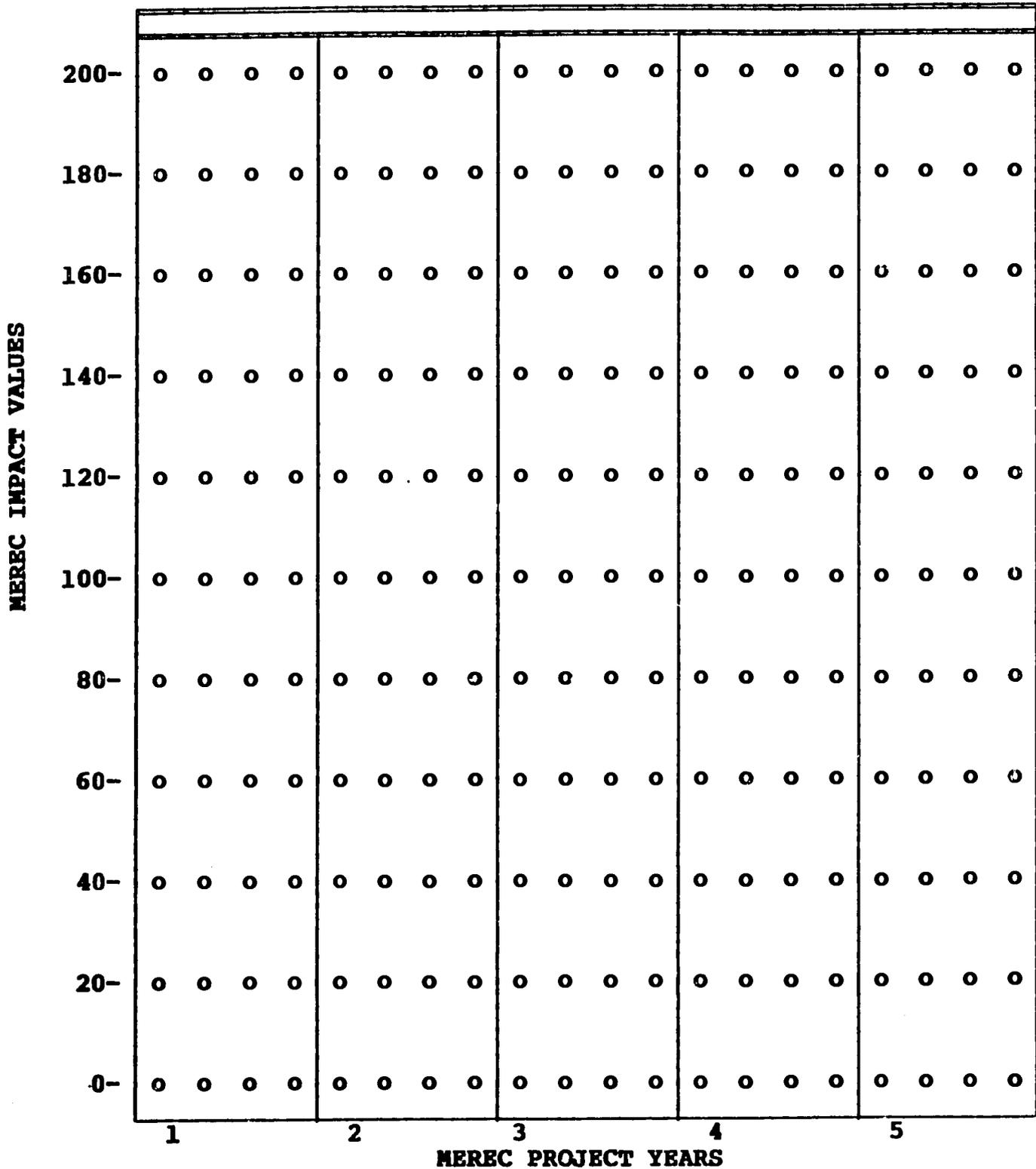
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FIGURE XI-4

MEREC SUB-PROJECT IMPACT VALUE PROFILE

SUB-PROJECT TITLE(S) :

INDICATOR(S) MEASURED:



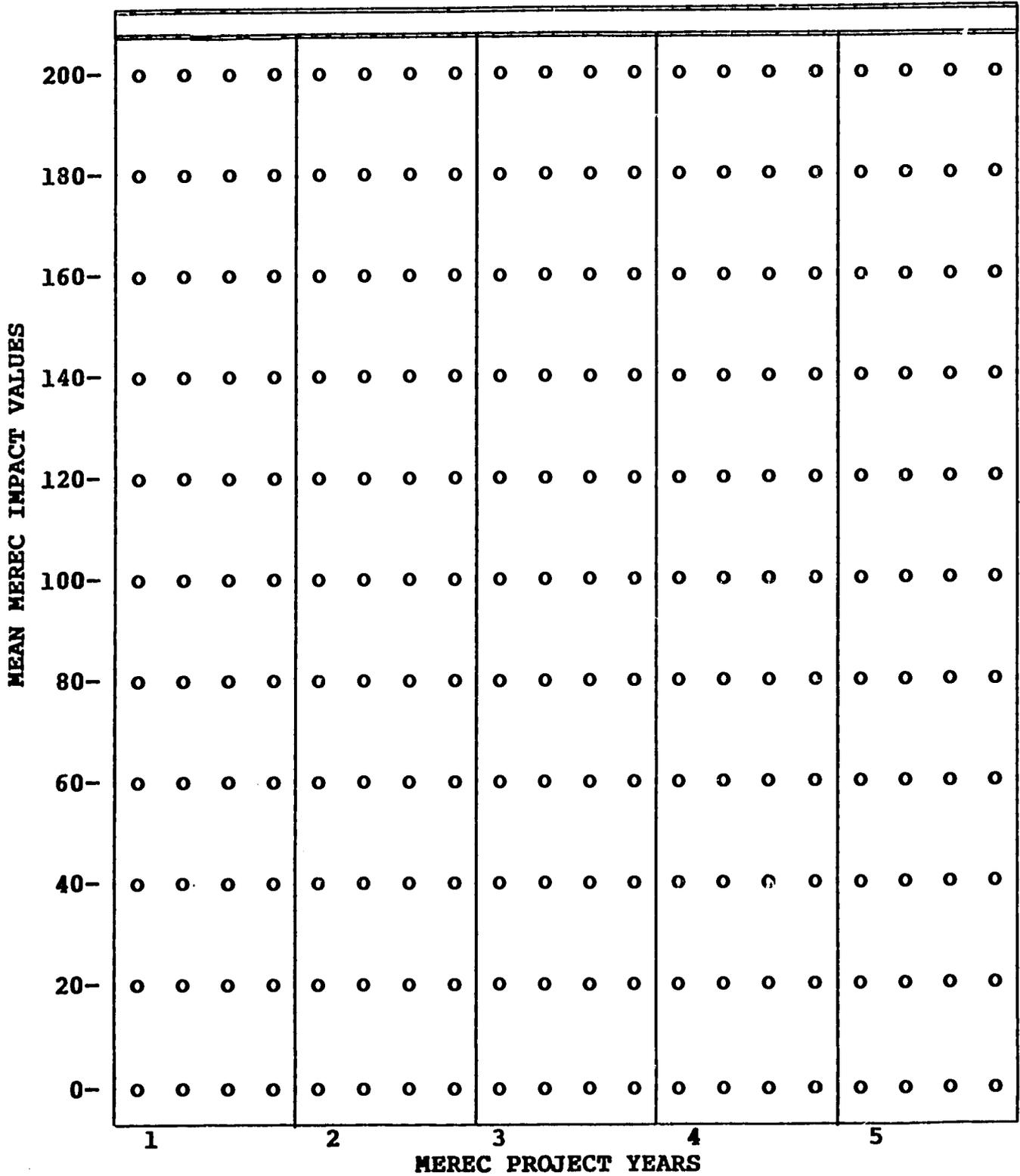
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FIGURE XI-5

MEREC RESOURCE INDICATOR SUMMARY VALUE PROFILE FORM

RESOURCE(S) :

INDICATOR(S) MEASURED:



1999

## **CAVEATS AND INTERPRETATIONS: TRANSPORTATION SECTOR**

### **Fuel Usage:**

The usage of fuel for internal combustion engines is fundamentally dependent upon two factors:

- The number of vehicles
- The cost of the fuel

The projections made for MEREC presupposes that fuel costs will continue to increase gradually, which should result in some reduction in fuel usage. On the other hand, there is a continuing rate of increase in the use of internal combustion engine vehicles.

Improvements in the road network in Tacloban are expected to result in some reduction in travel time and distance. The relatively small reduction in projected usage is largely based on reduction in these two factors. If, however, there is a substantial increase in the number of vehicles accompanied by a reduction in fuel prices based on a continuing oil glut, a sharp increase in fuel usage would be expected (instead of a decrease). Conversely, if both vehicle prices and fuel should increase substantially, for any reason, the reduction in consumption would be greater than projected. The fact that fuel consumption might increase in spite of MEREC should not be overlooked. Vehicles in Tacloban are becoming increasingly important for transportation, industry, and recreation. With a substantial improvement in the economy, vehicle usage could escalate despite the project generated pressures to reduce fuel consumption which pervade the Transportation Sector.

# *CHAPTER XII*

## CHAPTER XII

**SECTOR:** Education and Training

**SUB-PROJECT:** Education and Training in MEREC Objectives and Strategy

**FIGURE XII-1**

### SECTOR COMPLETION REQUIREMENTS FORM

**A. COORDINATION TASKS REMAINING**

1. MEREC Sector Overview Form
2. MEREC Sub-Project Overview Form
3. MEREC Impact Indicator Definition Chart
4. MEREC Indicator Data Collection Summary Form
5. MEREC Indicator Achievement Register

	* Submitted	To be ** Completed
1. MEREC Sector Overview Form	X	
2. MEREC Sub-Project Overview Form	X	
3. MEREC Impact Indicator Definition Chart		X
4. MEREC Indicator Data Collection Summary Form	X	
5. MEREC Indicator Achievement Register		X

**B. COMPLETION NOTES**

A-1

Information Submitted

A-2

Information Submitted

A-3

Definition Chart requires schedules involved in curriculum development, community and media support

A-4

Information Submitted

A-5

Requires further planning before projections can be made

\* Submitted: Tacloban officials review information with MEREC representatives and make changes based on best available Tacloban information consistent with MEREC project objectives.

\*\* To be Completed: Review existing information in Tacloban and working with MEREC representatives supply missing data and/or entries as required to meet MEREC objectives.

FIGURE XII-2

MEREC SECTOR OVERVIEW FORM

<p><b>EDUCATION AND TRAINING: Resource Indicator</b></p>		
<p><b>SECTOR PURPOSE:</b> To educate and train Tacloban City citizens to conserve and utilize energy and resources more efficiently through use of schools, radio, TV, and barangay leaders.</p>		
<p><b>COORDINATING SECTORS:</b> Encompasses overall MEREC education and special programs for Urban Farming, Water and Sewer, Waste Management, Energy Conservation, Housing, Transportation, and Land Use.</p>		
<p><b>SECTOR PRIMARY OBJECTIVE:</b> To educate and train Tacloban City citizens about energy utilization and resource conservation.</p>		
<p><b>M E R E C   S U B - P R O J E C T S</b></p>		
<p><b><u>SUB-PROJECT #1</u></b></p>	<p><b><u>SUB-PROJECT #2</u></b></p>	<p><b><u>SUB-PROJECT #3</u></b></p>
<p><b>TITLE:</b> Education and Training</p>	<p><b>TITLE:</b></p>	<p><b>TITLE:</b></p>
<p><b>PRIMARY OBJECTIVE:</b> Educate and train City residents to utilize and conserve available energy and resources.</p>	<p><b>PRIMARY OBJECTIVE:</b></p>	<p><b>PRIMARY OBJECTIVE:</b></p>
<p><b>INDICATOR:</b> Learner hours per month as a percent of total City population.</p>	<p><b>INDICATOR:</b></p>	<p><b>INDICATOR:</b></p>
<p><b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b> To be developed by Tacloban officials in coordination with MEREC representatives.</p>	<p><b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b></p>	<p><b>PROJECTED TARGET INDICATOR VALUE (TIV) FOR END OF 20th MEREC QUARTER:</b></p>

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**TABLE XII-1**

**MEREC SUB-PROJECT OVERVIEW FORM**

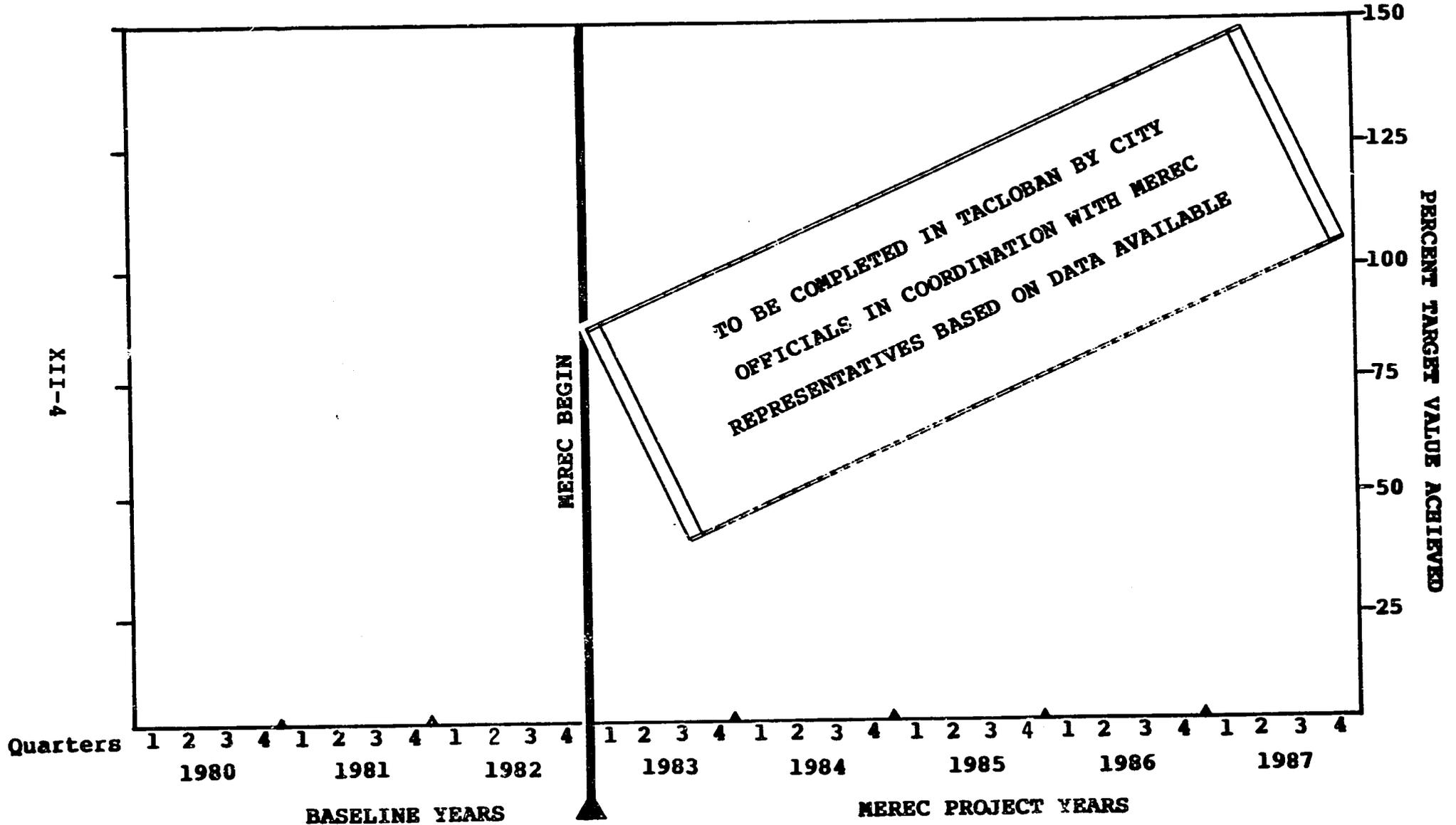
1	<b>SECTOR:</b> Education and Training: Resource Indicator
2	<b>SUB-PROJECT TITLE:</b> Education and Training
3	<b>RESPONSIBLE OFFICIAL:</b> Mayor Obdulia R. Cinco
4	<b>PRIMARY PURPOSE:</b> To Educate and Train All City Residents to Conserve and Utilize Energy and Resources More Efficiently.
5	<b>MEASUREMENT INDICATOR:</b> Learner Hours Per Month as a Percent of Total City Population.
6	<b>BEGIN BASELINE VALUE (BBV) OF INDICATOR: BBV =</b> To be Developed by Tacloban Officials in Coordination With MEREC Representatives.
7	<b>MEREC BEGIN VALUE (MBV) OF INDICATOR: MBV =</b> To be Developed by Tacloban Officials in Coordination With MEREC Representatives.
8	<b>DATA COLLECTION SOURCE:</b> Office of The Mayor of Tacloban City
9	<b>DATA COLLECTION METHOD:</b> To be Coordinated With Sector Chief.
10	<b>PROJECTED TARGET INDICATOR VALUE (TIV): TIV =</b> To be Developed by Tacloban Officials in Coordination With MEREC Representatives.
11	<b>PROJECT APPROACH:</b> <ul style="list-style-type: none"> <li>a. Check, coordinate, support education information component of all Sectors (Children, March 1984; Adults, May-June 1984).</li> <li>b. Schedule and coordinate regular visits to Demonstration Community: Pre-Occupancy: <ul style="list-style-type: none"> <li>(1) During construction to examine quality and strength and availability of local materials;</li> <li>(2) After construction to assess structure and architectural practicability of indigenous materials and design.</li> </ul> </li> <li>c. Post-Occupancy: To assess energy and other resource efficiency of houses constructed.</li> <li>d. Utilize local radio stations to broadcast vital MEREC information.</li> <li>e. Organize dialogues on MEREC projects with various groups.</li> <li>f. Distribute MEREC T-shirts to active MEREC workers and information campaigners.</li> </ul>

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FIGURE XII-3

MEREC IMPACT INDICATOR DEFINITION CHART  
TACLOBAN CITY

EDUCATION AND TRAINING



**TABLE XII-2**

**MEREC INDICATOR DATA COLLECTION SUMMARY FORM**

5-IIX

SECTOR: EDUCATION AND TRAINING	SUB-PROJECT INDICATOR: Learner Hours Per Month as a Percent of Total City Population
<p><u>MEASUREMENT METHOD:</u></p> <p>Obtain Data Routinely From Office of The Mayor Based on Learner Hours Per Month Per Total City Population</p>	
<p><u>FREQUENCY OF DATA PICK-UP:</u></p> <p>To be Coordinated With Sector Chief</p>	
<p><u>LOCATION(S):</u></p> <p>Office of The Mayor, City of Tacloban</p>	
<p><u>DATA ORGANIZATION:</u></p> <ol style="list-style-type: none"><li>1. Use of MEREC Achievement Register Form (Table XII-3)</li><li>2. Enter Quarterly in MEREC Sub-Project Impact Value Profile (Figure XII-3)</li><li>3. Enter Quarterly in MEREC Resource Indicator Summary Value Profile Form in Mayor's Office (Figure XII-3)</li></ol>	
<p><u>DATA COMPUTATION:</u></p> <ol style="list-style-type: none"><li>1. Quarterly Average of Monthly Results for Entry in MEREC Achievement Register Form (Table XII-3)</li><li>2. Annual Average Every Four Quarters for Entry in MEREC Achievement Register Form (Table XII-3)</li></ol>	

TABLE XII-3(a)

MEREC INDICATOR ACHIEVEMENT REGISTER

1983 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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TABLE XII-3(b)

NEREC INDICATOR ACHIEVEMENT REGISTER

1984 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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TABLE XII-3(c)

**MEREC INDICATOR ACHIEVEMENT REGISTER**

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1985 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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TABLE XII-3(d)

**MEREC INDICATOR ACHIEVEMENT REGISTER**

1986 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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TABLE XII-3(e)

NEREC INDICATOR ACHIEVEMENT REGISTER

1987 Project Year		Extended Baseline Values (EBV)		Projected Target Value (PTV)		Actual Achievement Values (AAV)		Impact Values (IV)	
Month	Quarter	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	Indicator Values	Quarter Percent	IV = $\frac{AAV}{PTV}$	Quarter
1									
2									
3									
Q1									
4									
5									
6									
Q2									
7									
8									
9									
Q3									
10									
11									
12									
Q4									
ANNUAL SUMMARY									

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FIGURE XII-4

MEREC SUB-PROJECT IMPACT VALUE PROFILE

SUB-PROJECT TITLE(S):

INDICATOR(S) MEASURED:

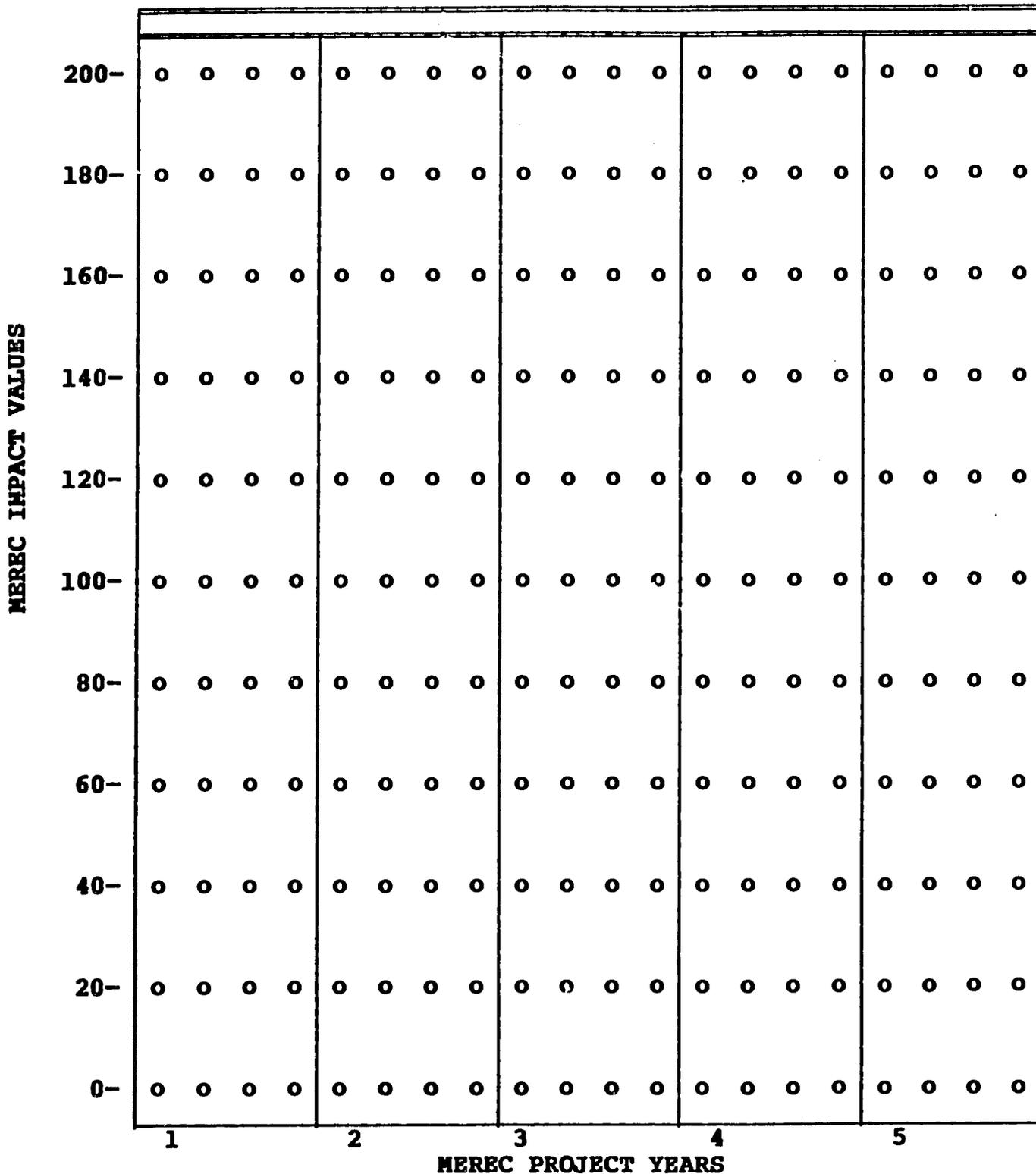
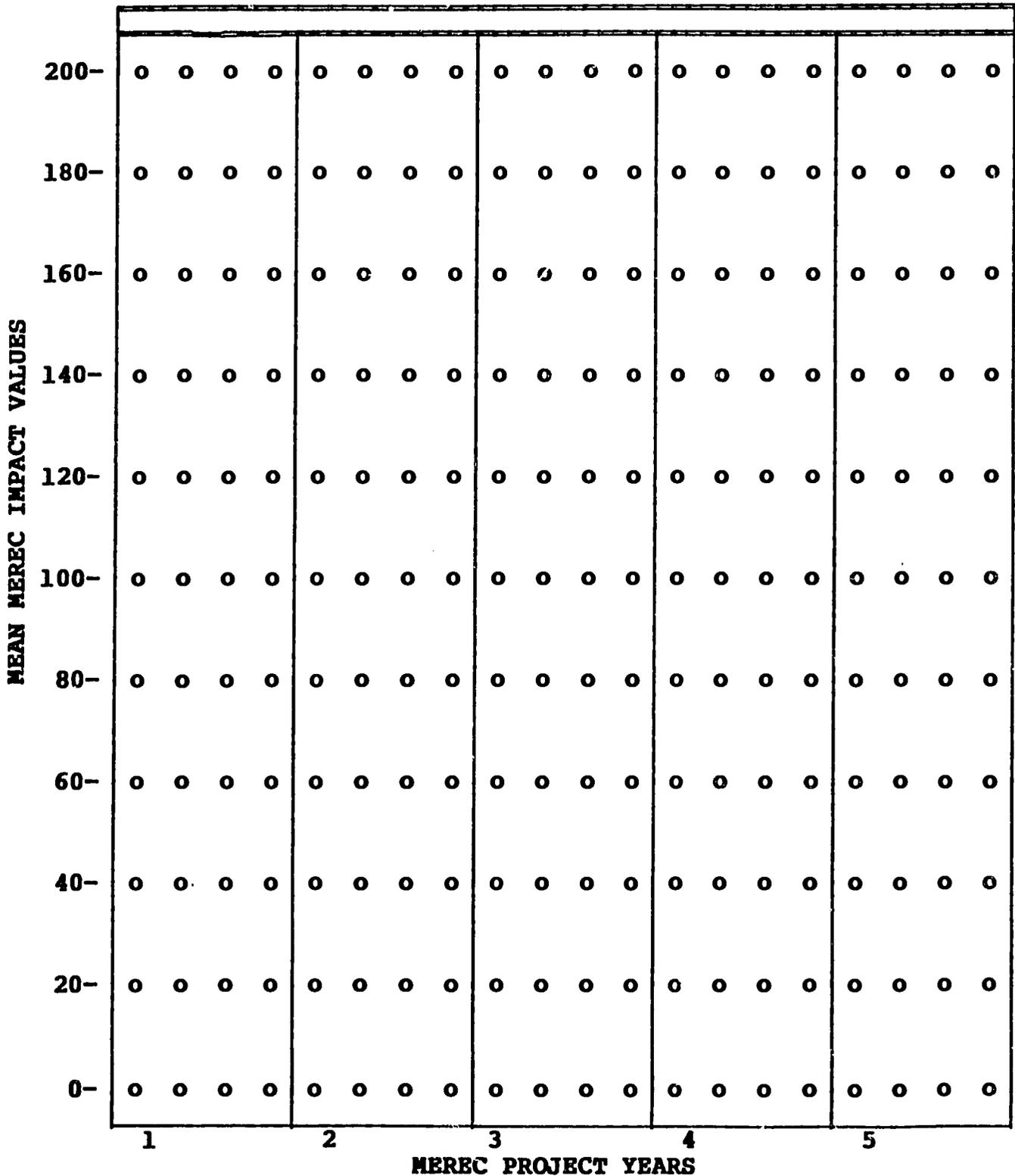


FIGURE XII-5

MEREC RESOURCE INDICATOR SUMMARY VALUE PROFILE FORM

RESOURCE(S) :

INDICATOR(S) MEASURED:



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## CAVEATS AND INTERPRETATIONS: EDUCATION AND TRAINING SECTOR

The Education and Training Sector involves a sustained effort to communicate how individual citizens of Tacloban can assist in achieving the MEREC objectives of improved resource utilization and energy efficiency. This educational information dissemination program involves:

- Developing a curriculum adapted to each grade level for Tacloban's primary and secondary schools.
- Obtaining authority for use of MEREC-centered curriculum in the public school system.
- Writing and production of the curriculum materials for use by teachers in the classrooms.
- Public programs for citizens to be developed and carried out by barangay captains at the community level.
- Radio and TV programs presenting talk shows and dramatizations related to MEREC.
- The establishment of publicity relating to prizes and incentives for writing of poetry, scripts, articles and essays, etc.

Obviously, such an ambitious educational effort depends in large part upon the cooperation of the school system to make teachers' time available to write the curriculum materials and teach MEREC in the classroom. Unless approval is obtained from the Superintendent of Education, and the key officials, the educational program will be severely weakened.

Similarly, unless the barangay captains are properly trained, possess relevant materials, and hold MEREC meetings and presentations in a way that interests neighborhood residents, the educational program will founder.

Radio and TV presentations of MEREC materials will require both imagination and an understanding of the relationship between MEREC and day-to-day activities and expenses that occur in the typical Tacloban household. If these programs succeed in relating resource utilization and energy efficiency to the practical necessities of daily life, the programs will be valuable to the community.

To get started, the incentive program requires money from citizens and organizations. In addition, it requires the use of placards, posters, and announcements to recruit prize applicants. Unless the prizes are appealing to bright and ambitious adolescents, the results will be mediocre. On the other hand, if these scripts and scenarios are good enough to attract audiences on TV and radio, in addition to the prizes in money, scholarships, etc., the results could be substantial.

The success of the MEREC program lies in its acceptance by the average citizen in Tacloban. Acceptance and involvement of Tacloban citizens, in turn, depends upon the success of the educational program. Its success will be an outcome of the quality of the curriculum, the support of school and political authorities, the enthusiasm and involvement of the teachers, and the quality of the MEREC-related TV and radio programs. A successful education and training effort in Tacloban depends on the enthusiasm and support of key officials. If their current enthusiasm translates into sustained and convincing educational and training programs, MEREC's margin of success will be substantially increased.

