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Bureau of Reclamation PASA Team
Activities in Connection with
USAID WATER RESOURCES DEVELOPMENT PROJECT
No. 492-11-120-233

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REPORT OF PROGRESS

NUMBER 47

FOR THE PERIOD

JULY 1, 1969 THROUGH SEPTEMBER 30, 1969

PREPARED BY

UNITED STATES BUREAU OF RECLAMATION

FOR

BUREAU OF PUBLIC WORKS - GOVERNMENT OF THE PHILIPPINES

AND

THE UNITED STATES

AGENCY FOR INTERNATIONAL DEVELOPMENT

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Project Engineer

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SECTION I

PROJECT DESCRIPTION

The agreement of November 2, 1962 between the Agency for International Development and the United States Bureau of Reclamation established the initial project which was called the "Water Resources Survey Project". This Agreement of November 2, 1962 sets forth the general purpose and scope of the Water Resources Survey Project as initially conceived. Further descriptive information on the original Water Resources Survey Project is given in detail in Progress Report No. 43 covering the period of January 1, 1967 through June 30, 1967. The Water Resources Survey Project continued throughout FY 1967 to function more or less along the original concept, with continuing emphases on planning of the surface water resources for seven river basin areas. However, in FY 1968, the Water Resources Survey Project was combined into the Water Resources Development Project which included (1) the Agricultural Productivity-Irrigation Project and (2) the Water Resources Survey Project. After combining both functions into the Water Resource Development Project, BuRec and USAID has broadened its objectives and scope of activities. More attention has been given to the collection and quality of basic data, particularly streamflow records. Also, in connection with Shallow Well Pump Irrigation Research and Demonstration Project (Activity No. 492-15-120-241), the BuRec Team working with the newly created Division of Water Resources of the GOP-Bureau of Public Works, and other organizations of the Philippine Government as well as certain Divisions of USAID specific attention is being given to the possibilities of a more practical approach to groundwater development by the design and construction of more efficient shallow irrigation wells. In addition to advising the Philippine Government, principally through the Bureau of Public Works, on matters relating to water resources investigations and planning, effort is also being directed toward the training of Filipino engineers and other technical personnel in techniques of basic data collection and project planning for water resource development. Work is also being continued on the investigation of projects originally singled out in the seven river basin areas. On May 8, 1969 a new and revised Project Agreement between the GOP and USAID which provides for an enlarged 4-man Bureau of Reclamation team. In addition to general planning assistance, guidance will also be given in hydrology, land classification and groundwater engineering. This will result in a considerable increase in technical assistance over that which has been provided over the past three years. Under existing operations USAID maintains total jurisdiction over advising the NIA on operation and maintenance problems. This report covers only the activities of the BuRec team.

SECTION II

PROJECT HISTORY

The history of the original Water Resources Survey Project is given in this section of the April 1965 Monthly Progress Report and again in considerable detail in Report No. 43, for the period January 1, 1967 through June 30, 1967. Also other historical information is given under Section I of this report.

SECTION III

PROJECT ENGINEERING

A detailed discussion of the engineering and other phases of the work carried out under the Water Resources Development Project is contained in Progress Report No. 46. This covered work up through April 15, 1969. From April 25 through July 5, 1969 the Project Engineer (BuRec) was on home leave. Most of the work during this period consisted of routine work carried forward by the Water Resources Division of the Bureau of Public Works. For this reporting period, work which has been carried forward is discussed below.

Upper Pampanga River Project

In July 1969 the National Irrigation Administration consummated a loan agreement with the International Bank for Reconstruction and Development for a loan of \$34 million to be utilized in constructing the multipurpose Upper Pampanga River Project, the total cost of which will be about 75 million dollars including local currency. The National Irrigation Administration has also executed a contract with Engineering Consultants Incorporated (ECI) of Denver, Colorado, to provide consulting services in connection with design and construction management, particularly with respect to the Pantabangan Dam. The Project Engineer (BuRec) has had frequent conferences with officials of the Project, with particular respect to mapping project lands and land classification. USAID has been requested to provide through the BuRec team, advice and guidance on classification of project lands, including the training of Filipino personnel.

Aerial Surveys and Mapping

All of the aerial surveys and mapping work scheduled under the original contract, with the exception of mapping of the Balintongan reservoir site was completed and delivered by Aero Service Corporation prior to this reporting period. In this reporting period, work has been proceeding toward completing payments for all work delivered to date. These actions are about completed.

see sheet

Because of difficulties arising in establishing horizontal and vertical controls in the Balintongan reservoir site, work of compiling a topographic map of the reservoir site was suspended during the main mapping activity. However, by means of new techniques, it is proposed to have a reservoir map compiled, using aerial photography flown at the time when the original photography was done. A draft of a change order has been prepared to have this work done by Aero Service Corporation and it is expected to have the change order completed and the map compilation work underway soon.

Balog-Balog Project

During the reporting period, a series of studies have been made to determine the feasibility of "pump back storage" hydroelectric development at the Balog-Balog damsite. Also, personnel of the Water Resources Division of the Bureau of Public Works and the Bureau of Soils have continued work of delineating project lands. Although this work falls short of a land classification survey, it will serve to show generally what lands may be included in the project for development or rehabilitation.

Reverse Circulation Rotary Drill Rig

It is generally recognized by those that have some knowledge of groundwater and wells, that there is a need for improvement in the design and construction of wells throughout the Philippines, particularly for high yield irrigation wells. In recent years in the United States, and other areas throughout the world where geological conditions are favorable, the technique of using reverse circulation rotary drilling has met with considerable success in the construction of large diameter irrigation wells. It is most likely that such a rig would be effective in several areas throughout the Philippines, provided the proper means of operation can be achieved and landowners would be willing to accept and adopt improved well drilling techniques. During the reporting period USAID/Engineering and the Project Engineer/BuRec made numerous contacts with private drilling contractors to explore the possibilities of arranging for efficient and aggressive operation of the drill rig if and when it is brought into the country.

On the basis of these discussions and a further analyses of the limited amount of work that may be available for a reverse circulation rotary drill rig for the first year or so of operation in the drilling of large diameter irrigation wells, it is desirable that the rig be a combination machine which is also capable of drilling by the direct circulation rotary method. By addition of auxiliary equipment, some makes of reverse circulation rotary drill rigs can be readily converted to a direct circulation drill rig. It is believed that such a rig can be profitably used part of the time for drilling commercial wells with 8" to 12" bores and as deep as 1500 feet in the Manila area and possibly at other localities in the Philippines.

A draft specification for a reverse circulation rotary drill rig was prepared and is now under review. It should be noted that these specifications do not provide that the rig shall be convertible to a direct circulation rig, therefore it may be necessary to include this requirement in the specifications. Although funds for purchase of the rig will come from the NIA equipment loan, agreement has been reached within the GOP that the drill rig will be under the general jurisdiction of the Bureau of Public Works. Cost information now available indicates that auxiliary equipment for direct circulation drilling will cost another \$35,000 over the cost of a reverse circulation rig, or approximately \$125,000 for the combination direct/reverse rig.

Shallow Well Pump Irrigation and Demonstration Project

The initial work of drilling test borings in the Baloc area, Sto. Domingo, Nueva Ecija was discussed in Progress Report No. 46. Because of the acute drought during the last dry season, the landowner where the test borings were located installed centrifugal (suction) pumps on three of the test bores in the Baloc area. Although these test borings were not intended to be used as a source of irrigation water supply, they did provide enough water to make a good rice crop on a limited area and demonstrated the value of a dependable water supply. During this reporting period, specifications for construction of five shallow production test and demonstration wells in the Baloc area were prepared and invitations were issued the latter part of September, requesting qualified well drilling contractors to submit proposals. Also, in connection with the shallow well project, all available information was obtained from well screen manufacturers in the United States. On the basis of literature provided, inquiries were made of US well screen manufacturers for prices. Because of the importance of well screens in groundwater development and their high cost when imported, an attempt is being made to get local firms interested in manufacturing well screens and casing. It seems there is a good possibility that ultimately, well screens of suitable types may be manufactured locally. The resulting lower cost doubtlessly would stimulate interest and acceptance of better well design and construction.

Other Groundwater Possibilities

The last two dry seasons, roughly November-May, have been unusually severe. This has stimulated considerable interest in irrigation from wells over much of the Philippines and has been particularly true with respect to the sugar cane areas of Northern Negros. In the latter part of this reporting period, AID/Engineer and the Project Engineer/BuRec made a field trip to the Victorias Milling Company District in Northern Negros. Because of the last drought we found that there was considerable interest in developing new

wells for irrigation. Also, an inspection of existing wells indicated that many existing wells have experienced considerable difficulty and many have failed or are not economical producers.

On the basis of this preliminary inspection, it is apparent that there is a need for preliminary groundwater investigations of the area, in order to guide further groundwater developments. Officials of the Victorias Milling Company, who rely on sugar cane production to sustain operations of their sugar mill, indicated an interest in a groundwater investigation of the areas served by the mill. Further discussions with the Director of the Bureau of Public Works indicated that the Bureau would be willing to initiate groundwater investigations in the area, provided adequate financing arrangements can be made and cooperation by local landowners and others in the area is assured.

Project Investigations and Studies

As explained previously in this report, studies of the Balog-Balog project in Tarlac province are continuing. In this reporting period, studies have been made of hydroelectric power potentialities at the Balog-Balog damsite. Pump back storage for the generation of peaking power seems to be the most attractive possibility. However, generation of peaking power at this site must be considered along with other alternative sources of power before a final determination is made. Also, as explained, an inventory of project lands is being continued. Alternate spillway designs for the dam are also being studied and evaluated. Water supply studies of the project indicate that year-round irrigation may be in the range of 20,000 to 25,000 hectares.

SECTION IV

PROGRESS-PROCUREMENT

Procurement is not a normal function of the BuRec team. Limited supplies and equipment which are required are procured by USAID/Philippines, and the Washington or Denver office of the Bureau of Reclamation. The Bureau of Public Works also, under the existing agreement, is to provide support and supplies. However, during the past quarter or longer, supplies required for the day-to-day operations of the Water Resources Division have been critically lacking. Failure to obtain supplies when needed has had some adverse effect on the operations of the Division. Also, certain branches of the Water Resources Division, are short of equipment or equipment on hand has become worn out or obsolete, a condition that continues to adversely affect efficient operation. The Surface Water Branch is short of suitable vehicles for field operations. Also, the Groundwater Branch is short of parts and equipment. This

is demonstrated by 4-deep well turbine pumps which are in need of repair so that they can be used for test pumping in the Baloc area. However, because of failure to get the pumps repaired, they may not be available when needed.

SECTION V

PROGRESS - CONSTRUCTION

There is no construction activity under the BuRec PASA team portion of the Water Resources Development Project covered by this report.

SECTION VI

SUMMARY DATA

Financial records are not maintained by the BuRec Water Resources Development Team. Accounts which apply to the operation of the Team are maintained by the GOP Bureau of Public Works, USAID and offices of the Commissioner and Chief Engineer of the Bureau of Reclamation.

SECTION VII

PERSONNEL

Bureau of Reclamation:

On duty July 5, 1969 - September 30, 1969
Project Engineer - M. G. Barclay

Three additional people are to be added to the team and the Bureau of Reclamation is actively working to fill vacancies. The status of these positions as of October 15, 1969, is as follows:

1. General Hydrologist - John Steele
Cleared and expected to report for duty about December 29, 1969.
2. Land Classifier - Vernon Lawrence
Clearance in progress and he is expected to report in January 1969.
3. Groundwater Engineer - An offer has been made to a qualified geologist-engineer and it is anticipated that he will accept. Upon acceptance of offer, clearance actions will be initiated and he may be able to report sometime during the first quarter of 1970.

Also the Bureau of Reclamation can supply specialists on short term basis as required.

Bureau of Public Works:

The Bureau of Public Works furnishes personnel to staff the project consisting of engineers, geologists and other technicians, typists, motor vehicle drivers, janitors, etc. The total number of such personnel provided during the reporting period averaged about thirty people. Main efforts of the Water Resources Development Project are now centered in the newly created Water Resources Division of the Bureau of Public Works. This Division is still undergoing organization but it evidently will include Branches of Stream Gaging, Groundwater and Project Investigation and Planning. As a result of low salaries reorganization, etc. some of the personnel of the Water Resources Division have left for employment elsewhere. This outward migration of personnel has been going on for some time and involves some people that have been sent to the States for USAID participant training. It is desirable that this loss of some of the more competent personnel be stemmed if possible. Also, uncertainties arising from reorganization of the Water Resources Division is presently adversely affecting morale of some of the personnel of the Division.

SECTION VIII

ENVIRONMENTAL WORKING CONDITIONS

The Bureau of Public Works furnishes office space. However, adequate air conditioning has been generally lacking for sometime. Also, many of the lights in the office have been burned out for some time and lighting is presently inadequate. Many of the problems cited herein are attributed to lack of funds. Housing in the Manila area is adequate to very good. Vaccinations are readily available and medical advice and facilities are also at hand.