PROJECT DESCRIPTION



BAYABAS SMALL RESERVOIR IRRIGATION PROJECT

Prepared by:

Engineering and Development Corporation of the Philippines (EDCOP) ENGINEERS-ENVIRONMENT CONSULTANTS

PROJECT BRIEF

Project	:	Bayabas Small Reservoir Irrigation Project
Project Location	:	Barangay Bayabas, Dona Remedios Trinidad, Bulacan
Project Proponent	:	National Irrigation Administration Regional Office No. 3
Address of Proponents	:	Tambubong, San Rafael, Bulacan
Contact Persons on ECC Matters	:	Engr. Angelito S. Miguel Manager, Bulacan-Aurora-Nueva Ecija Irrigation Management Office NIA Regional Office No. 3 Tambubong, San Rafael, Bulacan Tel. No. (044) 766-3888 Engr. Orlando M. Cablayan EDCOP Study Team Leader 10/F JELP Building, 409 Shaw Boulevard Mandaluyong City Tel. No. (632) 534-6449
Nature of Projects/ Limits	:	Construction of 72.50 meters zoned earth-rockfill dam to impound water of Bayabas River to augment water supply to the 26,981 hectares Angat Maasim River Irrigation System through the existing Bustos Dam, and also irrigate about 50 hectares in Dona Remedios Trinidad in the province of Bulacan. The center of the dam axis is located at coordinates 14° 57' 0.184" North latitude and 121° 06' 30.147" East longitude Catchment Area is 50.9 km ² .
Project Components		Rockfill damThe rockfill dam is 350.0 meters long and 72.50meters high above the river bed with crest width of12.00 meters.ReservoirThe reservoir area at maximum level is 190.0 hectarescapable of storing 47.479 million cubic meters.Diversion tunnelIn order to be able to construct the dam, a concrete425.0 meters long concrete-lined diversion tunnelmeters will be constructed to divert water during

	construction, and serve as outlet of irrigation water
	<u>Cofferdam</u> Cofferdam will be constructed at the upstream toe of the dam so that river flow can be diverted to the Tunnel.
	Spillway Ungated spillway 70.0 meters wide and 240.0 meters long will be located at the left bank as an extension of the crest but separate from the dam. It will be used to discharge water during the occurrence of extreme flood events.
Project Timeline :	Preparation feasibility study and detailed design – October 2014 – June 2018
Perceived Impacts of the	Environmental Impact
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1. GENERAL

The demand for water from the Angat River is a sensitive issue among the various uses – domestic water supply, hydropower and irrigation. The NWRB has been able to intervene in this conflict by setting compromise water allocation during critical levels of the Angat reservoir. This has resulted in the reduction of allocation to NIA which adversely affects the extent of actual irrigated area in the Angat Maasim River Irrigation System (AMRIS) particularly during the dry season. Considering the ever increasing demand for domestic water supply in Metro Manila, and given that domestic water supply is afforded higher priority, the search and development of additional water sources for AMRIS is viewed by NIA as a long term solution. Harnessing the water from Bayabas River for irrigation is a possible solution to the problem.

2. PROJECT LOCATION AND ACCESSIBILITY

The Bayabas SRIP is located in the municipality of Dona Remedios Trinidad in the province of Bulacan (Appendixes 1 and 2). It is located in the north easternmost part of Bulacan Province in Central Luzon Region or Region III. It is one of the 24 cities and municipalities comprising the province. Doña Remedios Trinidad is approximately 73 km northeast of Manila, which is the nation's capital, and 43 km away from the City of Malolos, which is the provincial capital.

Doña Remedios Trinidad is bounded in the North by the Municipalities of Gapan and General Tinio in Nueva Ecija; in the south by Municipality of Norzagaray, Bulacan; in the east by Municipality of Dingalan, Aurora and General Nakar, Quezon; and in the west by Municipalities of San Miguel, San Ildefonso, San Rafael and Angat in Bulacan. It can be reached via four entry points, namely: Angat, Akle (San Ildefonso), Sibul (San Miguel) and Matictic (Norzagaray) Bualacan. However, the most convenient way going to the town center is through the Angat-DRT Road and the Akle (San Ildefonso) Road.

3. CLIMATE

Because of its altitude, the town of Doña Remedios Trinidad has a cooler and moister climate than the rest of the towns of Bulacan. There are two pronounced seasons in the municipality, the dry season which is from November to April, and the wet season from May-October. Based on records from rainfall stations in the Angat Dam, the mean annual rainfall in the watershed area is about 2,696.8 millimeters.

4. PROPOSED DEVELOPMENT SCHEME

The project will involve the construction of a zoned earth-rockfill dam of 72.5 meters in height across Bayabas River in Doña Remedios Trinidad, Bulacan. The impounded water will be utilized to augment water supply to the Angat Maasim River Irrigation System through the existing Bustos Dam, and irrigate about 50 hectares of farm lands in Doña Remedios Trinidad. Appendix 3 shows the site development plan of the project.

The proposed project components are as follows:

- (1) Earth-rockfill dam with a central clay core.
- (2) A structure for diversion of river flows during construction consisting of concrete lined circular tunnel, cofferdam in the upstream.
- (3) A reservoir with gross storage not more than 47.479 million cubic meters, and area of about 190 hectares.
- (4) An open chute spillway that will be designed capable to discharge 1000-year return period flood.

4.1 The Earth-Rockfill Dam

For the Rockfill dam to attain the requisites degree of imperviousness, its midsection or the central core will be composed of clayey materials. Both faces of the core will be protected with transition zone or filters. The filters have to be designed to avoid internal transportation of fines if seepage occurs.

To provide structural stability and more protection to the impervious zones, a rockfill shell composed of locally quarried agglomerate, will put as blanket in the upstream and downstream side of the said zone in such a manner that their .respective slope requirement will be attained.

4.2 Spillway

The spillway will be located at the left abutment as a continuation of the crest of the dam but separate from the dam proper. It is of the free chute type terminating in a ski jump to throw the water into a deep, wide plunge pool downstream.

4.3 Diversion Tunnel

To be able to construct the dam, a tunnel is necessary to divert river flows and flood flow with return period of 1 in 10 years. The diversion tunnel will be circular and concrete lined.

The entrance of the tunnel will be placed sufficiently inside the left abutment to reach adequate covering for the large portal and to shorten as much as possible the total tunnel length and reduce underground excavation. The inlet portal is a monolithic concrete structure which provides hydraulic transition to increase the inlet efficiency. The structure will also provide a platform for maneuvering stoplogs and gates as necessary during closure of diversion. The inlet portal entrance will be divided into two parts by a partition pier to reduce the dimensions of the gates and to facilitate closure operations.

4.4 Cofferdam

The river waters will be diverted into the tunnel by means of cofferdam.

The cofferdam which forms the toe of the slope of the dam will be a conventional rockfill embankment with an upstream clay blanket protected by rock.

5. ENVIRONMENTAL AND SOCIO ECONOMIC IMPACT

5.1 Environmental Impact

In general, as per previous studies, the implementation of the Bayabas SRIP will not create major physical and social problem. As a whole, the beneficial effects of the project are expected to outweigh negative impacts.

Flora and fauna will not be severely affected because the area that will be submerged is small compared to the watershed area. .

5.2 Socio Economic Impact

No major unmitigable negative social impact is expected from the project. During construction, the project will create employment opportunities in the project area. The project will increase rice production and enhance the farm income of farmers in Bulacan and Pampanga. A Certificate on Non-Overlap has been issued by the NCIP Region III office (**Appendix 4**).



Appendix 1: Project Location Map

Appendix 2: Location of the Main Dam





Appendix 3: Site Development Plan

Appendix 4: Certificate of Non-Overlap

