



Thanit Chakkawanon 2009: An Application of a Genetic Algorithm for Pipe System Water Allocation at Raok Reservoir in Rayong Province. Master of Engineering (Irrigation Engineering), Major Field: Irrigation Engineering, Department of Irrigation Engineering. Thesis Advisor: Associate Professor Kampanad Bhaktikul, Ph.D. 301 pages.

Raok reservoir locate in Tambol Thung Khwai Kin, Amphoe Klaeng, Rayong province. It has been constructed since B.E.2531 and completed in B.E.2535. The storage capacity is totally 19.65 MCM. The purpose of this reservoir is to be the water resource of Khlong Phlo's river basin. Water can be allocated to downstream agriculture area. Especially, areas which are situated along the river's side. In B.E.2544, pipe system for Raok reservoir have been constructed in order to supply water through pipe system which total distance of 14.986 km.

Durian, Mangosteen, Rambutan and Longan are main fruits for this irrigation. Those fruits are economical productivity of Eastern region which earn a lot of income to our country. Therefore, major objective of this study is to apply Genetic Algorithm program for pipe system to analyze the irrigation management of Raok reservoir under limitation of water resource. There are 4 main pipes including 34 water allocation buildings which are able to irrigate water to orchards totally 2,500 Rais with equivalentents.

From above study, this application can reduce water loss from system allocation by optimization and allocate water for this agriculture area with sufficiency and equality. Moreover, GA has ability to response water requirement for each type of fruits. Likewise, irrigation area is increased in each allocation building although using current water resource.