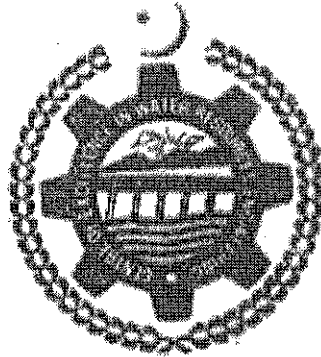


THESIS

**APPLICATION ON NUMERICAL MODELS TO OPTIMIZE
WEIR DIMENSIONS AT DIFFERENT FLOOD LEVELS**



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ABSTRACT

Power is a very important infrastructure of the overall development of a nation. It is the tool to strengthen the economic growth of a country. Therefore, an ever increasing need for more and more power generation recently in many developing countries of the world. A number of hydropower projects have launched to meet the power demand of the country, Golen Gol is one of them.

It is runoff river hydropower project on Golen Gol river near to Chitral. The study aimed at the Weir dimensions of the Golen Gol hydropower project. For this purpose flood estimation was done by regional method as well as other flood frequency techniques (Gumbel's Distribution, Log-Normal Distribution, Log-Pearson Type III Distribution) using Design Flood software. The results of different techniques were compared. The Gumbel's Distribution gives the most suitable results. The maximum flood was estimated on return period of 100, 1000 and 10000 years were $161\text{m}^3/\text{sec}$, $218\text{m}^3/\text{sec}$ and $276\text{m}^3/\text{sec}$ respectively.

The flood levels were computed by HEC-RAS Model using the selected return periods. The inline weir dimensions were computed at different flood levels. The inline weir dimensions were computed using HEC-RAS model for $161\text{m}^3/\text{sec}$, $218\text{m}^3/\text{sec}$ and $276\text{m}^3/\text{sec}$ discharges. The model results were in good agreement with the project design report.