

**HYDROLOGICAL ANALYSIS AND HYDRAULIC DESIGN
FOR WEIR AND INTAKE STRUCTURES OF 32 MW BASHO
HYDROPOWER PROJECT**



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By

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ABSTRACT

Power generation and supporting infrastructures are very important for the overall development and economic growth of a country. Basho Hydropower Project is one of such projects aiming to reduce the energy deficit of the country. It is a run of river hydropower project on Basho Lungma (Nullah) near Skardu town in the Northern Area. The study aims at hydrological analysis of flood peaks and hydraulic design of diversion structure. For this purpose flood estimation is carried out by various flood frequency analysis techniques.

Hydrological data was collected from the office of Surface Water Hydrology Project WAPDA and processed in various data sets. Flood frequency analysis was applied on each type of data set. This exercise resulted in a flood discharge of 60 cumecs for 100 years return period, which is used for the hydraulic design of weir structure. By applying various hydraulic formulae weir structure is designed in consideration of 3.5 cumecs outflow through intake and other hydraulic conditions.

The results from various formulae were compared. It was found that Tyrolean weir, a combined structure of weir and intake, seems to be efficient and more economical being it is submerged, ungated and unobstructed. Prior to adopting the conclusion, the study of physical hydraulic model is recommended for confirmations of designed parameters.