

**Assessment of Flood Water Management Strategies in Daraban
Watershed Using GIS and remote sensing**

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The Daraban Zam is situated across the Khora River, about 13 km from Daraban town and 69 km from D.I. Khan city in the Khyber Pakhtunkhwa Province. The Daraban command area covers approximately 490 sq. km, with a longitude of 70.2011 and a latitude of 31.744. Heavy rainfall in the Daraban catchment area causes significant water flows in the Daraban command area, which also affects the river and nearby areas, ultimately resulting in flash floods. Assessing flood risk areas is a crucial aspect of flood management strategy. Storage of floodwater in various forms is an important component in reducing flood risks and protecting people and property from the damaging impacts of floods. The major objectives of this study were to assess the flood water potential in the Daraban watershed using satellite data, analyze the land use/land cover status of the catchment and command areas using GIS and remote sensing, and propose strategies for effective flood water management for agriculture and domestic use. Understanding how much water needs to be diverted or cut off from the study area is essential, as flood flow management techniques are developed based on the command area and the water potential generated from annual rainfall. For data acquisition, Landsat 8 imagery from 2013 and a digital elevation model with a spatial resolution of 30 meters for bands 1 to 5 and 7 were used. ArcMap 10.1 was used to determine elevation, slope, aspect, and water potential (annual rainfall, volume, and runoff) to develop suitable strategies for proper flood control. ERDAS Imagine 9.2 was used for the classification of both the catchment and command areas of the Daraban watershed. The results showed that the drainage of the Daraban command area flows from high elevation to low elevation. During heavy rainfall, water flows into the river near the Daraban command area, causing flash floods. The Daraban catchment area is at a high elevation, while the

command area is at a low elevation. The catchment area has a water volume of 24.1 million cubic meters (mcm^3), resulting in a runoff of approximately 6.266 mcm^3 (calculated as 24.1×0.26). The study concluded that a reservoir with a depth of 8 feet and covering 7 acres can be developed for proper water storage, fishing, crop raising, and other natural needs. This reservoir would contribute to the economy and social well-being of the people in its vicinity.