This study quantifies the availability of fresh groundwater using time-domain electromagnetic techniques and past record for Phularwan village situated within Chaj Doab of the Indus Basin, Pakistan. Groundwater model is calibrated using past data available through the skimming experiments performed during 1976 at Phularwan village and time-domain electromagnetic survey conducted during 2010. The calibrated model is used to evaluate the performance of skimming wells in order to control upconing. The results will be presented.