

NUMERICAL MODEL OF MARDAN SCARP
DESCRIBING SUBSURFACE DRAINAGE

THESIS BY

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ABSTRACT

The un-steady state flow of a fluid in an un-confined aquifer can be approximated by Non-linear partial differential equations. For solving the drainage problem in **Mardan SCARP** Project area, two dimensional numerical model (**CHISTY**) was developed, which describes the Rising Water Table case for un-steady state flow toward equally spaced drains above a horizontal impermeable bed in a homogeneous isotropic soil.

Finite Difference equations has been formulated from the governing flow equation and solved by the iterative successive over Relaxation technique. A **Digital Computer Programme (SABIR-FTN)** was written to solve these equations based upon explicit backward Finite Difference technique. In this program using the field data of Demonstration area of **Mardan SCARP**, the water table potential at different nodes selected in between the drain of area has been calculated for different months of a year using different recharge values for each month.

Different time intervals were selected and their effect on Rising Water Table has been evaluated. Finally a comparison of observed and computed water table values for different months of a year has been made to find the agreement with the field data.