

## Pumping Test analysis Distance -Drawdown

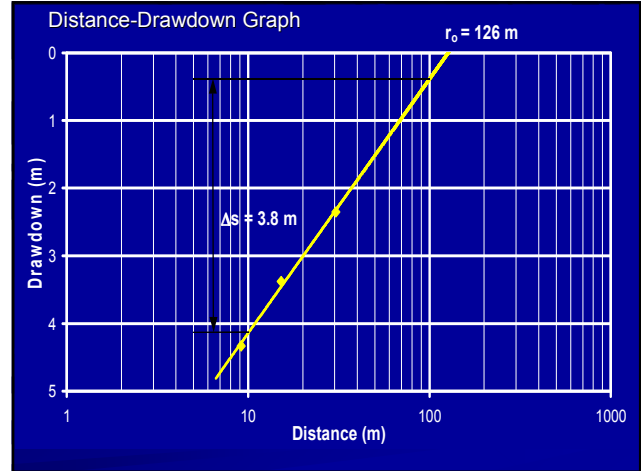
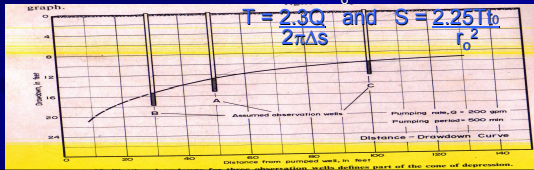
■ Simultaneous drawdown data from at least three observation wells, each at different radial distances, can be used to plot a log(distance)-drawdown graph.

■ The Cooper-Jacob equation, for fixed t, has the form:

$$s = \frac{2.3Q}{4\pi T} \log\left(\frac{2.25Tt}{r^2S}\right)$$

So the log(distance)-drawdown curve can be used to estimate aquifer characteristics by measuring  $\Delta s$  for one log-cycle and the  $r_0$  intercept on the distance-axis.

$$T = \frac{2.3Q}{2\pi\Delta s} \quad \text{and} \quad S = \frac{2.25Tt}{r_0^2}$$



## Radius of Influence ( $r_0$ )

•The radius of influence of a well can be determined from a distance-drawdown plot.

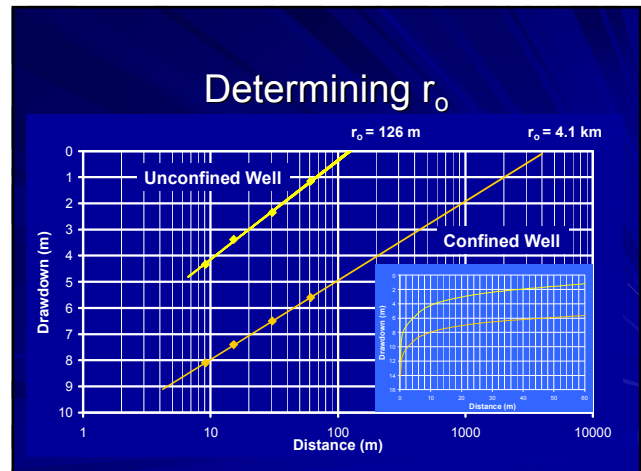
•For all practical purposes, a useful comparative index is the intercept of the distance-drawdown graph on the distance axis. ( $r_0$ )

•Radius of influence can be used as a guide for well spacing to avoid interference

•Since radius of influence depends on the balance between aquifer recharge and well discharge, the radius may vary from year to year.

•For unconfined wells in productive aquifers, the radius of influence is typically a few hundred metres.

• For confined wells may have a radius of influence extending several kilometres



## Distance draw down

Diameter of the well 0.30 m  
Q= 3800 lpm  
b= 8.2 m  
T=400 minutes

Well No	Distance from P.Well (m)	Drawdown (m)
1	15.0	1.8
2	30.7	1.4
3	57.7	1.04

**END**