

Input Values

0.50	R	Recharge rate (permeability rate) (in/hr)
0.150	Sy	Specific yield, Sy (dimensionless) default value is 0.15; max value is 0.2 provided that a lab test data is submitted
30.00	Kh	Horizontal hydraulic conductivity (in/hr) Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
170.000	x	1/2 length of basin (x direction, in feet)
33.000	y	1/2 width of basin (y direction, in feet)
18.00	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

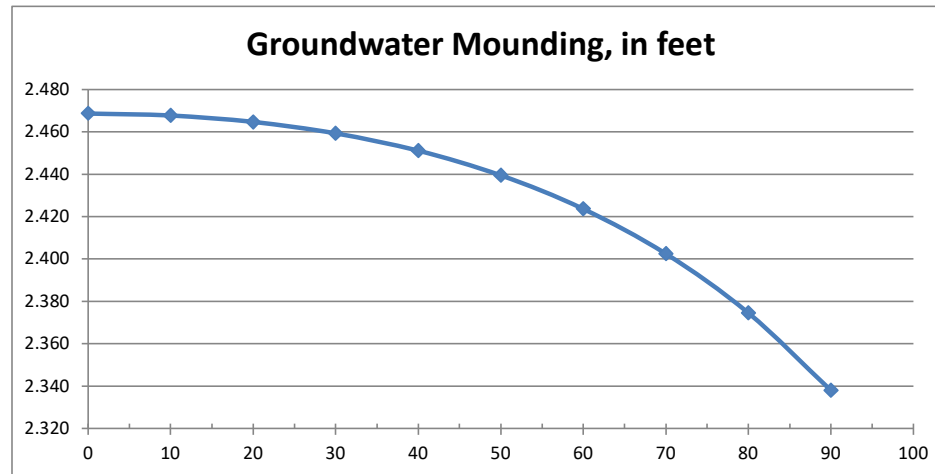
12.469	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
2.469	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet

2.469	0
2.468	10
2.465	20
2.459	30
2.451	40
2.439	50
2.424	60
2.402	70
2.374	80
2.338	90



Re-Calculate Now



Infiltration Basin 2

Avg tested infiltration rate = 12 in/hr, Use 6 in/hr  
For Kh, use 30 in.hr

Basin 2 is 340'x66' - Use 170'x33'  
With 9" storage, the volume storage of 0.402 ac-ft will infiltrate in about 18 hours when the vertical infiltration rate is reduced to 0.5 in/hr.

The calculated mound will then be less than 2.5'.

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Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.