

Input Values

1.6500
0.280
16.50
21.000
73.500
0.180
25.000

R
Sy
K
x
y
t
hi(0)

use consistent units (e.g. feet & days **or** inches & hours)

Recharge (infiltration) rate (feet/day)
Specific yield, Sy (dimensionless, between 0 and 1)
Horizontal hydraulic conductivity, Kh (feet/day)*
1/2 length of basin (x direction, in feet)
1/2 width of basin (y direction, in feet)
duration of infiltration period (days)
initial thickness of saturated zone (feet)
*distance between measured high groundwater el 49 to the wetland, elevation 24
maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
maximum groundwater mounding (beneath center of basin at end of infiltration period)

Conversion Table

inch/hour	feet/day
0.83	1.65
8.27	16.54
hours	days
4	0.18

Inf Sys 1

In the report accompanying this spreadsheet (USGS SIR 2010-5102), vertical soil permeability (ft/d) is assumed to be one-tenth horizontal hydraulic conductivity (ft/d).

*The drawdown time for a 10-year storm volume is under 4.3 hours

25.864
0.864

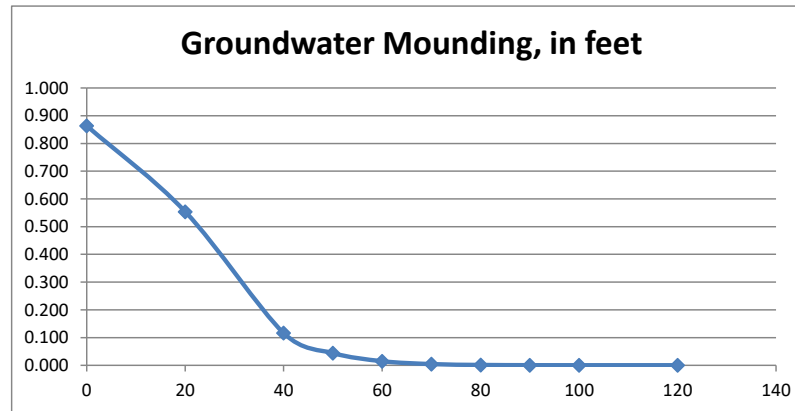
h(max)
Δh(max)

Ground-water Mounding, in feet
Distance from center of basin in x direction, in feet

0.864	0
0.554	20
0.116	40
0.044	50
0.015	60
0.005	70
0.001	80
0.001	90
0.000	100
0.000	120



Re-Calculate Now



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.

Input Values

1.6500
0.280
16.50
18.500
73.000
0.220
22.000

R
Sy
K
x
y
t
hi(0)

use consistent units (e.g. feet & days **or** inches & hours)

Recharge (infiltration) rate (feet/day)
Specific yield, Sy (dimensionless, between 0 and 1)
Horizontal hydraulic conductivity, Kh (feet/day)*
1/2 length of basin (x direction, in feet)
1/2 width of basin (y direction, in feet)
duration of infiltration period (days)
initial thickness of saturated zone (feet)
*distance between measured high groundwater el 46 to the wetland, elevation 24
maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
maximum groundwater mounding (beneath center of basin at end of infiltration period)

Conversion Table

inch/hour	feet/day
0.83	1.65
8.27	16.54
hours	days
5	0.22

*The drawdown time for a 10-year storm volume is 5.3 hours

Inf Sys 2

In the report accompanying this spreadsheet (USGS SIR 2010-5102), vertical soil permeability (ft/d) is assumed to be one-tenth horizontal hydraulic conductivity (ft/d).

22.974
0.974

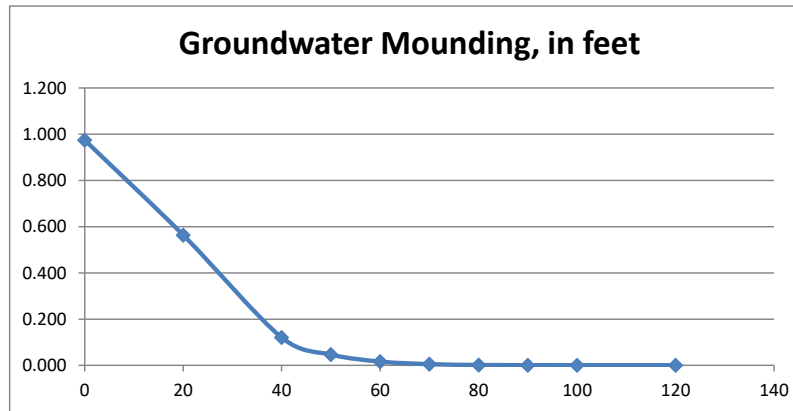
h(max)
Δh(max)

Ground-water Mounding, in feet
Distance from center of basin in x direction, in feet

0.974	0
0.564	20
0.120	40
0.047	50
0.016	60
0.005	70
0.002	80
0.001	90
0.000	100
0.000	120



Re-Calculate Now



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Input Values

1.6500
0.280
16.50
14.500
38.000
0.190
6.000

R
Sy
K
x
y
t
hi(0)

7.013
1.013

h(max)
 $\Delta h(\max)$

Ground-water
Mounding, in
feet

Distance from
center of basin
in x direction, in
feet

1.013	0
0.249	20
0.004	40
0.001	50
0.000	60
0.000	70
0.000	80
0.000	90
0.000	100
0.000	120

use consistent units (e.g. feet & days **or** inches & hours)

Recharge (infiltration) rate (feet/day)
Specific yield, Sy (dimensionless, between 0 and 1)
Horizontal hydraulic conductivity, Kh (feet/day)*
1/2 length of basin (x direction, in feet)
1/2 width of basin (y direction, in feet)
duration of infiltration period (days)
initial thickness of saturated zone (feet)
*distance between measured high groundwater el 30 to the wetland, elevation 24
maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
maximum groundwater mounding (beneath center of basin at end of infiltration period)

Conversion Table

inch/hour	feet/day
0.83	1.65
8.27	16.54
hours	days
5	0.19

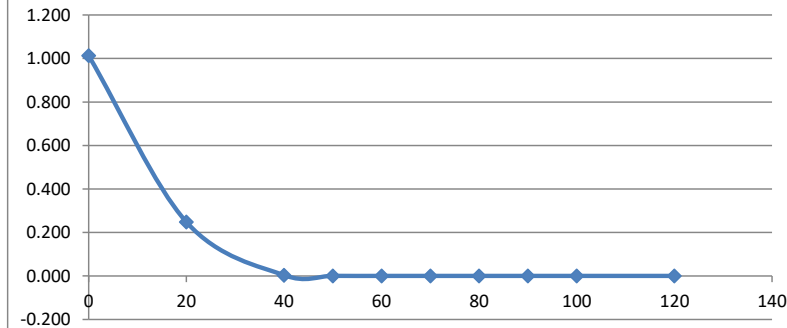
*The drawdown time for a 10-year storm volume is 4.5 hours

Inf Bas 3

In the report accompanying this spreadsheet (USGS SIR 2010-5102), vertical soil permeability (ft/d) is assumed to be one-tenth horizontal hydraulic conductivity (ft/d).

Re-Calculate Now

Groundwater Mounding, in feet



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