6199-4-4P AID:97222 | 09/02/2020

Calculate infiltrartion by using given below equaction

(f) = fC + (fO - fC)e-Kt

Here f is infiltration at any given time t,  fC is final infiltration rate, fO is Initial infiltration rate, K is Horton’s infiltration constants, t is time.

Substitute  fC is 61mm/h, fO is 159mm/h, k is 4.7 (1/h) for Fuquay pebbly loamy sand & given time t in hours

Case I :

At t as 12minutes

         f  =159+(159-61)e-4.71260

            =159+(98)(0.390628)

=159+38.2815

=197.2815 mm/hour

Case II:

 At t as30 minutes:

=159+(159-61)e-4.73060

=159+9.34619

=168.34619 mm/hour

Case III:

 At t as 60 minutes:

=159+(159-61)e-4.76060

=159.89134 mm/hour

Case IV:

 At t as 120 minutes:

=159+(159-61)e-4.712060

=159+(159-60)e-4.72

=159.00810 mm/hour

The volume of water infiltrated :

Referring to the equation 4-5 of the chapter, Volume =fCt +fO-fCK(1-e-Kt)

Substitute  fC is 61mm/h, fO is 159mm/h, k is 4.7 (1/h) for Fuquay pebbly loamy sand & t as 2 hours i.e 120 minutes

=(612)+159-614.7(1-e-4.72)

=(612)+984.70.99917

=122+20.8493

=142.8493 mm3