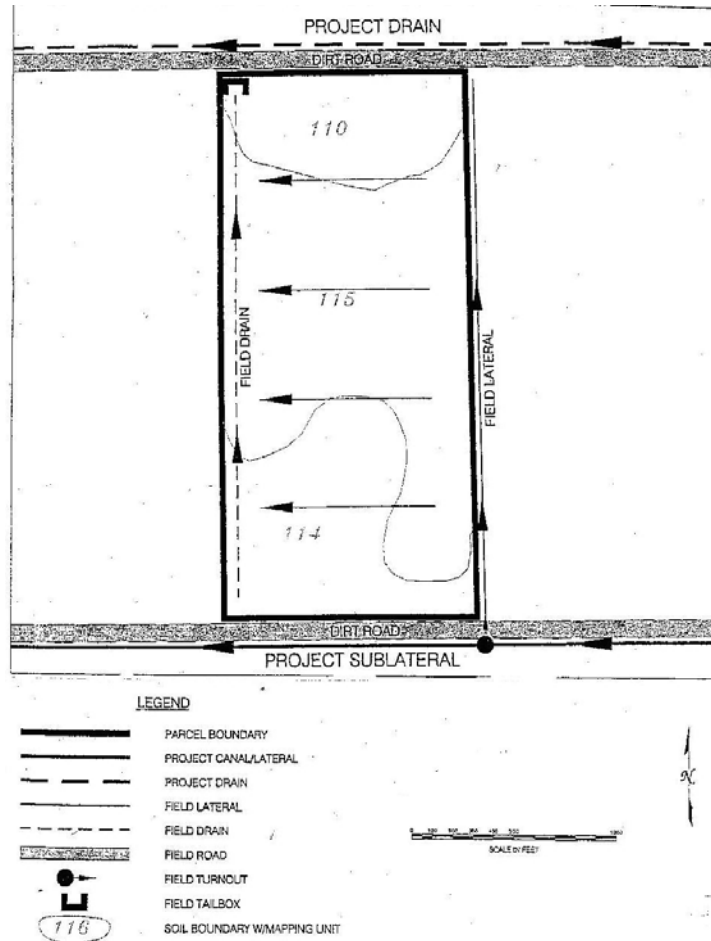


Homework Assignment 5



The figure above shows a 72 acre field irrigated by borders about 150 ft wide and 1200 feet long. The average slope of the field was measured as 0.002645. It is planted to alfalfa. The soil is a “Imperial silty clay with a depth of 4 feet. This soil is subject to extensive cracking. A typical depletion during the normal irrigation cycle is 3 inches. On June 22, 2000 the field was irrigated with 11.2 cfs (the flow per unit width averaged 0.028 cfs/ft) for 4.33 hours. The advance time ranged from 5.3 to 6.2 hours and the advance rate was somewhat linear or uniform although not precisely so. What can be said is that it was estimated that 28.5% of the inflow was field tailwater and 6.3% was deep percolation. If the infiltration function was independently determined to be:

$$z = 0.0813\tau^{0.200} + 0.083$$

in which z is in inches, τ is in minutes, what was the application efficiency of this irrigation? How would you recommend the discharge and time of cutoff be adjusted to increase E_a ?