**Conceptual Diagram for Model**

K = 1

K = 13

K = 8.4

Python Y Coordinates Increase from Top left corner

Python X Coordinates Increase from Top Left corner

Water table depth increases with decrease in head gradient

15 m to 5 m, WTD goes from 3 m to 10 m

dx = 100

dy = 100

nrow = 25

ncol = 25

nlay = 1

ztop = 200

zbot = 0

**Scenario 1:**

head\_left = 495 m

Creates left WTD of ~5 m

head\_right = 455 m

Creates right WTD of ~45 m

**Scenario 2:**

head\_left = 250 m

head\_right = 210 m

Conductivities:

Set background np.array using np.ones, so K = 1 for everywhere except the next two areas

For [12:, 0:13], K = 13

For [12:, 13:], K = 8

Locations of Farms:

* Wildcat Farm:
  + Area: 121406 m2
  + Side: Sqrt of Area = ~348 m = 3.48 cells = 4 cells = 4x4 farm cells
  + Farm Corners:
    - Southwest (15, 1): [1, 16]
    - Northwest (19, 1): [1, 20]
    - Northeast (19, 5): [5, 20]
    - Southeast (15, 5): [5, 16]
    - Well (16, 2): [2, 17] 🡪 adjusted point: [7,2]
  + Farm Array: (1:5, 15:19) 🡪 fix because won’t show up properly with python indexing
    - Should be at the following coordinates to have the farm show up in correct location: [5:9 ,1:5]
* ACME Farm:
  + Area: 2.023 \* 106 m2
  + Side: l \* w = (2w) \* w = area
    - w = ~1005 m = 10.05 cells = 10 cells
    - l = 2w = 20 cells
  + Farm Corners:
    - Southwest (7, 0): [7, -1]
    - Northwest (7, 21): [7, 21]
    - Northeast (17, 21): [17, 21]
    - Southeast (17, 0): [17, -1]
    - Well1 (9, 5): 🡪 [0, 5, 9]
    - Well2 (15, 10): 🡪 [0, 10, 15]
  + Farm Array: (7:17, 0:20) 🡪 fix because won’t show up properly with python indexing
    - Should be at the following coordinates to have the farm show up in correct location: [5:25, 7:17]

Cotton Water Use: 41.2 in/yr = 1.04648 m/yr

* Excess Irrigation (recharge to GW) = 0.377 m/yr

Alfalfa Water Use: 74.3 in/yr

* Excess Irrigation (recharge to GW) = 0.679 m/yr

Fix markdown cells of model

Create Conceptual drawing of model using specs from model sheet