

# SPRINKLER IRRIGATION DESIGN

## SOILS INFORMATION:

SOIL \_\_\_\_\_ SOPE \_\_\_\_\_  
MAX. DE PTH \_\_\_\_\_ FT. \_\_\_\_\_ INTAKE RATE \_\_\_\_\_ IN/HR,  
AVAILABLE WATER HOLDING CAPACITY \_\_\_\_\_ IN/FT. (AWC)

## CROP INFORMATION:

CROP \_\_\_\_\_ EFFECTIVE ROOT ZONE DEPTH \_\_\_\_\_ FT.  
PEAK DAILY CONSUMPTIVE USE \_\_\_\_\_ IN/DAY

## WATER SUPPLY:

SOURCE \_\_\_\_\_ AMOUNT AVAILABLE \_\_\_\_\_ GPM \_\_\_\_\_ CFS \_\_\_\_\_ AC/FT.  
DELIVERY SCHEDULE \_\_\_\_\_ QUALITY OF WATER \_\_\_\_\_

## DESIGN AND LAYOUT:

MAXIMUM DAYS PER IRRIGATION CYCLE = (can be less but not more than)

AWC \_\_\_\_\_ IN. x 50% divided by \_\_\_\_\_ IN/DAY PEAK DAILY CONSUMPTIVE USE =

\_\_\_\_\_ IRRIGATION CYCLE DAYS

SPRINKLER SPACING ON LATERAL \_\_\_\_\_ FT. LATERAL SPACING ON MAINLINE \_\_\_\_\_ FT.

HOURS OF OPERATION PER SET \_\_\_\_\_ HRS.

NET APPLICATION = \_\_\_\_\_ DAYS/IRR. CYCLE x \_\_\_\_\_ IN. PEAK CONSUMPTIVE USE/DAY =  
\_\_\_\_\_ IN/NET

GROSS APPLICATION \_\_\_\_\_ IN. NET divided by \_\_\_\_\_ % IRR. SYSTEM EFFICIENCY = \_\_\_\_\_ IN. GROSS

PRECIPITATION RATE = \_\_\_\_\_ IN. GROSS divided by \_\_\_\_\_ HRS/SET = \_\_\_\_\_ IN/HR. PRECIPITATION RATE

G.P.M. PER SPRINKLER = USE CALCULATOR or

PR. RATE x AREA COVERED/SPRINKLER ( sprinkler spacings multiplied ex. 40x60 SQ. FT.) = \_\_\_\_\_ GPM

96.3

TOTAL GPM : \_\_\_\_\_ GPM/SPRINKLER x \_\_\_\_\_ TOTAL HEADS IN OPERATION = \_\_\_\_\_ TOTAL GPM

MINER'S INCHES NEEDED: TOTAL GPM divided by 11.22 GPM/MINER'S INCH = \_\_\_\_\_ MINER'S INCH

PIPE SIZING AND FRICTION LOSS MAINLINE AND LATERALS:

MAINLINE: MATERIAL TYPE, PRESSURE RATING \_\_\_\_\_  
LENGTH (FT) GPM DIAMETER (IN) VEL. (FT/SEC) FRICTION PSI/100' x 2.31'/PSI = FEET  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
HEAD LOSS DUE TO FRICTION \_\_\_\_\_ FT

RISE, FALL, NONE (Circle One) IN MAINLINE \_\_\_\_\_ FT.

LATERALS: MATERIAL TYPE AND PRESSURE RATING \_\_\_\_\_

LENGTH (FT) NO. SPRINKLERS/LATERAL LATERAL DISCHARGE GPM DIAMETER (INCHES)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PRESSURE LOSS IN LATERAL DUE TO FRICTION \_\_\_\_\_ PSI

(PRESSURE LOSS NOT TO EXCEED 20% OF THE OPERATING PRESSURE)

PRESSURE REQUIRED (AT MAINLINE) TO OPERATE LATERAL \_\_\_\_\_ PSI

TOTAL DYNAMIC HEAD:

PRESSURE REQUIRED AT LATERAL \_\_\_\_\_ PSI x 2.31'/PSI = \_\_\_\_\_ FT.

FRICTION LOSS IN MAINLINE \_\_\_\_\_ FT.

ELEVATION DIFFERENCE BETWEEN PUMP AND HIGHEST POINT OF LATERAL LINE \_\_\_\_\_ FT.

LIFT AT WELL OR WATER SOURCE \_\_\_\_\_ FT.

MISCELLANEOUS VALVES - FITTINGS \_\_\_\_\_ FT.

TOTAL HEAD \_\_\_\_\_ FT.

PUMP REQUIREMENTS:

CAPACITY \_\_\_\_\_ GPM AT TOTAL HEAD \_\_\_\_\_ FT.

$\frac{\text{GPM} \times \text{TOTAL HEAD FT}}{3960 \times \text{PUMP EFFICIENCY \%}} = \left( \quad \right) \left( \quad \right) = \quad \text{BRAKE HORSE POWER}$   
 $( 3960 ) ( \quad )$

\_\_\_\_\_ INCH CHECK VALVE \_\_\_\_\_ INCH PRESSURE RELIEF VALVE

\_\_\_\_\_ NUMBER \_\_\_\_\_ INCH AIR VACUUM RELEASE VALVES