

**Surface Irrigation System
Detailed Evaluation Contour Ditch Irrigation System Worksheet**

Land user _____ Field office _____

Field name/number _____

Observer _____ Date _____ Checked by _____ Date _____

Field Data Inventory:

Field size _____ acres

Crop _____ Root zone depth _____ ft MAD ^{1/} _____ % MAD ^{1/} _____ in

Stage of crop _____

Soil-water data:

(Show location of sample on grid map of irrigated area.)

Soil moisture determination method _____

Soil series name _____

Depth	Texture	AWC ^{2/} (in)	SWD ^{3/} (%)	SWD ^{3/} (in)
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
		Total	_____	_____

Comments about soils: _____

Typical irrigation duration _____ hr, irrigation frequency _____ days

Typical number of irrigations per year _____

Type of delivery system, (earth ditch, concrete ditch, pipeline) _____

Method used to turn water out (shoveled opening, wood box turnout, siphon tubes, portable dams, concrete checks with check boards, etc.) _____

1/ MAD = Management allowable depletion

2/ AWC = Available water capacity

3/ SWD = Soil water deficit

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Field observations

Crop uniformity _____

Wet and/or dry area problems _____

Erosion problems _____

Other observations _____

Evaluation computations

Irrigated test area (from gird map) = (_____ in²) x (_____ in²/ac) = _____ ac

Actual total depth infiltrated, inches:

Depth, inches = $\frac{(\text{Irrigated volume, ac-in}) - (\text{Runoff volume, ac-in})}{(\text{Irrigated area, acres})}$

Depth, inches = _____ = _____ in

Gross application, F_g , inches:

$F_g = \frac{(\text{Total inflow volume, ac-in})}{(\text{Irrigated area, acres})} = \frac{_____}{_____} = \frac{_____}{_____} \text{ in}$

Distribution uniformity low 1/4 (DU):

$DU = \frac{(\text{Average depth infiltrated (adjusted) low 1/4, inches})}{(\text{Average depth infiltrated (adjusted), inches})}$

DU = _____ = _____

Runoff, RO, inches:

$RO, \text{ inches} = \frac{(\text{Runoff volume, ac-in})}{(\text{Irrigated area, ac})} = \frac{_____}{_____} = \frac{_____}{_____} \text{ in}$

$RO, \% = \frac{(\text{Runoff depth, inches})}{(\text{Gross application, } F_g, \text{ inches})} \times 100 = \frac{_____}{_____} = \frac{_____}{_____} \%$

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Deep percolation, DP, inches:

DP, inches = (Gross applic. F_g , inches) - (Runoff depth, RO, inches) - (Soil water deficit, SWD, inches)

DP, inches = _____ = _____ inches

DP, % = $\frac{(\text{Deep percolation, DP, inches}) \times 100}{(\text{Gross application, } F_g, \text{ inches})}$ = _____ %

Application efficiency (E_a):

(Average depth replaced in root zone = Soil water deficit, SWD, inches)

$E_a\%$ = $\frac{(\text{Average depth replaced in root zone, inches}) \times 100}{(\text{Gross application, } F_g, \text{ inches})}$ = _____ %

Potential water and cost savings

Present management:

Estimated present average net application per irrigation = _____ inches

Present gross applied per year = $\frac{(\text{Net applied per irrigation, inches}) \times (\text{no. of irrigations})}{(\text{Application efficiency, } E_a, \text{ percent})} \times 100$

Present gross applied per year = _____ = _____ inches

Potential management

Annual net irrigation requirement: _____ inches, for _____ (crop)

Potential application efficiency, E_{pa} : _____ % (from irrigation guide or other source)

Potential annual gross applied = $\frac{(\text{annual net irrigation requirement, inches}) \times 100}{(\text{Potential application efficiency, } E_{pa}, \text{ percent})}$

Potential annual gross applied = _____ = _____ inches

Total annual water conserved:

= $\frac{(\text{Present gross applied, inches}) - (\text{Potential gross applied, inches}) \times \text{Area irrigated, ac}}{12}$

= $\left(\frac{\quad}{12} \right) \times \left(\frac{\quad}{12} \right) = \quad$ acre-feet

Cost savings:

Cost per unit of fuel _____ Fuel cost per acre foot _____

$$= (\text{Cost per acre foot}) \times (\text{Acre feet saved per year}) =$$
$$= (\quad) \times (\quad) = \underline{\hspace{2cm}}$$

Cost savings = (Pumping cost) + (Water cost) = () + () =

Recommendations

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

Inflow _____ Outflow _____

Type of measuring device _____

[illegible]

Total volume (ac-in) _____

1/ Use a 24-hour clock reading; i.e., 1:30 p.m. is recorded as 1330 hours.

To find volume using ft^3/s :

To find volume using gpm:

$$\text{Volume (ac-in)} = .00003683 \times \text{time (min)} \times \text{flow (gpm)}$$

Grid Data

- 2/ From "typical" cumulative intake curve.
- 3/ From "adjusted" cumulative intake curve.
- 4/ Adjusted intake for lowest intake 1/4 of points (total number of points divided by 4).

$$= \frac{\text{Total depth adjusted, low 1/4}}{\text{Number grid points, low 1/4}} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ in}$$