

SYSTEM DESIGN, PERIODIC MOVE SPRINKLER
(Procedures as described in NEH, Section 15, Chapter 11)

Land user _____ Field Office _____
Job description _____
Location _____
Planner _____ Date _____ Checked by _____ Date _____

BASIC DATA (from planning worksheet)

1. 1/ Type of system _____
2. Area irrigated _____ acres (Sketch and dimension field on attached drawing or attached drawing or attach topographic map)
3. Crops to be grown _____
3. Net depth of application per irrigation (Fn) = _____ inches
4. Peak daily use rate during peak period of use = _____ inches/day
5. Soil name _____
5. Sprinkler intake group _____
5. Ground cover _____
5. Maximum allowable application rate _____ in/hr for _____ % slope
5. Minimum allowable application rate _____ in/hr
7. Minimum irrigation frequency _____ days
- 6,8. Time allowed for one irrigation based on min. frequency and irrigators' wishes _____ days
9. Minimum set time = $\frac{\text{Net application (Fn)}}{\text{Max applic. rate} \times E}$ = _____ = _____ hours
(Where E = application efficiency Eh or Eq. See comment 11.)
10. Minimum system requirements _____ gpm, _____ gpm/ac (from planning worksheet)
11. Design wind conditions _____ mph from the _____ (direction)
11. Design temperature conditions (average): Cool _____, Warm _____, Hot _____
11. Design humidity conditions (average): Humid _____, Moderate _____, Dry _____
11. The minimum design application efficiency (Eh or Eq) which will be acceptable _____%

1/ The numbers in the left column refer to the comment number in the step by step procedure write up in the Montana Irrigation Manual.

SYSTEM DESIGN, PERIODIC MOVE SPRINKLER
 (Procedures as described in NEH, Section 15, Chapter 11)--Continued

Land user _____ Field Office _____

SPRINKLER SELECTION (NEH, pages 11-39 to 11-43)

12. Alternative descriptions:

Alternative No. 1 _____
 Alternative No. 2 _____
 Alternative No. 3 _____

Alternative sprinkler head data:

- 12. Spacing on lateral (Sl) = ft (1)
- 12. Spacing on main (Sm) = ft (2)
- 13. Type of spray: Coarse = C, Medium = M, Fine = F
- 14. Effective portion of applied water (Re)
- 15. Preliminary application efficiency (Eh or Eq)
- 16. Preliminary gross application
 $= \frac{\text{Net (Fn)} \times 100}{\text{Eh or Eq}} = \text{Fg(in)}$
- 17. Set time for alternative (hr)
- 18. Preliminary application rate
 $I' = \frac{\text{Fg}}{\text{Set time}} = (\text{in/hr})$
- 19. Anticipated CU or DU for this alternative
- 20. Is application rate OK? (Yes or No)
 If no then stop

Alternative		
1	2	3

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SPRINKLER SELECTION (NEH, pages 11-39 to 11-43)

Alternative sprinkler head data--continued:

	Alternative		
	1	2	3
21. Expected application efficiency Eh = CU x Re = (%)			
22. Required gross application (Fg) = $\frac{fn \times 100}{Eh \text{ or } Eq}$ = (in)			
23. Required application rate I = $\frac{Fg \text{ (rev)}}{\text{Set time}}$ = (in/hr)			
24. Required sprinkler discharge qa = $\frac{I \times SI \times Sm}{96.3}$ = (gpm)			
25. Revised Nozzle size (NEH, Table 11-13)			
25. Required operating pressure from NEH table 11-13 or from manufacturers charts (psi)			
26. Wetted diameter (R)			
26. Check overlap: (1) 50% of R = (2) ___% of R =			

(1) Spacing on lateral (SI) - shall not exceed 50% of wetted diameter

(2) Spacing on main (Sm) shall not exceed:

- 60% of wetted diameter when winds < 5 mph
- 50% of wetted diameter when winds \geq 5 mph, but \leq 10 mph
- 30% of wetted diameter when winds > 10 mph

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SYSTEM LAYOUT (NEH pgs 11-43 to 11-49)

Alternative sprinkler head data--continued:

	Alternative		
	1	2	3
32. Number of laterals (from an inspection of the plan)			
33. Number of irrigation sets/irrigation, = $\frac{\text{Laterals/set}}{\text{No. laterals}}$			
34. Time required to complete one irrigation = $\frac{\text{Number of irrigation sets}}{\text{Number of settings per day}} = \text{days}$			
35. With design number of laterals operating, the total number of sprinklers running = #1 _____ + #2 _____ + #3 _____ + #4 _____ + #5 _____ = Nx			
36. Actual system capacity $Q = Nx \times qa = \text{gpm}$			

