

The first 3 pages of the form are to be filled out by Natural Resources Conservation Service (NRCS) personnel or the non-NRCS individuals [including a Technical Service Provider (TSP)] working with the subsurface drip irrigation (SDI) dealer/supplier and the landowner as the design of the SDI system is developed.

The form lists the information that needs to be included in the design documentation including the following:

Name—Name of landowner/operator requesting design assistance.

Ident. No.—Field or unit obtained from NRCS field office staff.

Legal Desc.—Legal description of location where the microirrigation system is being installed.

Sign the “Designed by” and “Checked by” blocks and enter the respective dates.

Approved by—The NRCS employee with proper engineering job approval authority or the TSP should sign this block and enter the date.

General Data

Form KS-ENG-394 for irrigation water management is required to verify that there is sufficient water to meet water needs during critical water use periods of crops.

Other items should be completed as listed on the form.

System Data

Water right—Indicate the gallons per minute (gpm) and acres of the water right for the land to be irrigated by the SDI system.

Pump design flow rate—Enter the reliable continuous water flow rate that will be available for the SDI system throughout the growing season. If the producer is unable to provide results from a pump test taken during the irrigation season within the past 3 years, then use a maximum of 80 percent of the pump flow rate provided. This should improve the probability of the zones functioning properly and maintaining the Coefficient of Uniformity (CU) throughout the irrigation season.

Irrigated by SDI system—Enter the number of acres to be irrigated by the SDI system.

Planned crops and rotation—Identify crops for use in determining peak water use requirements.

Water quality analysis—Enter what is required for the filtration system design and treatment of emitters (test to be performed at certified laboratory).

Application rate per zone—Enter the water demand for each zone.

Number of zones—Enter the number of individual zones to be irrigated.

No. watered concurrently—Enter the number of separate zones combined for establishing maximum water demand.

Planned irrigation rotation schedule—Enter the frequency of irrigation for each zone.

Mainline:

- Pipe size—List the pipe size from the water source and filtration system to the submains.
- Type—Is it polyvinyl chloride (PVC) or polyethylene (PE)?
- Pressure rating—Stamped pressure rating of the pipe.
- Length—How long is the mainline?

Submain:

- Pipe size—From the mainline to the head of the zones.
- Type—Is it PVC or PE?
- Pressure rating—Stamped pressure rating of the pipe.
- Length—How long is the submain?

Submain (if different pipe size from other submain):

- Pipe size—From the mainline to the head of the zones.
- Type—Is it PVC or PE?
- Pressure rating—Stamped pressure rating of the pipe.
- Length—How long is the submain?

Flushline:

- Pipe size—List the size for the flush lines at the lower end of the drip tape.
- Type—Is it PVC or PE?
- Pressure rating—Stamped pressure rating of the pipe.
- Length—How long is the flushline?

Drip tape (lateral):

- Brand—Manufacturer of the drip tape.
- Inside diameter (ID)—If more than one size, provide all sizes.
- Spacing—What is the spacing between drip tape lines?
- Planned depth—How deep will the drip tape be placed?
- Pressure rating—What is the pressure rating of the drip tape?
- Maximum length—What is the maximum drip tape length (row length)?

Emitter:

- Spacing—What is the distance between emitters?
- Discharge—What are the design flow rate and the pressure associated with this discharge rate?
- Factors—Manufacturer's values for the specific drip tape.
 - C_v—What is the coefficient of variability for the drip tape of the particular inner diameter?
 - x —What is the x factor for the Darcy-Weisbach formula?
 - k —What is the k factor for the Darcy-Weisbach formula?

Filter system:

- Brand—Name of filter system and the model number.
- Capacity—What is the capacity of the filter system and what is the pressure loss across the filter?
- Pressure at filter discharge—What is the pressure at the discharge of the filter?

Flow meter (water meter)—Brand of flow measurement device and the model number.

Sand separator—What are the type of sand separator and the capacity of the unit?

Chemigation valve—Brand of the chemigation valve and the model number.

Zone/Block Data

Zone number—Number of the zone to identify it from others for scheduling needs.

Design zone inlet pressure (downstream of valve)—Pressure at the beginning of the zone.

Average design (Q_{ave}) emitter discharge—Average flow rate and pressure for the emitters within the zone.

Maximum emitter discharge—Maximum flow rate and pressure for any of the emitters within the zone.

Minimum emitters (Q_{min}) discharge—Minimum flow rate and pressure for any of the emitters within the zone.

Number of emitters (n)—Total number for the zone.

Flow rate variation—Percent difference in the emitter flow rate from the average emitter flow rate.

Emission uniformity (EU)—Calculated using the formula: $100 \times (1.0 - [1.27 (C_v / (n)^{1/2})]) \times (Q_{min} / Q_{ave})$.

Subsurface Drip Irrigation (SDI)—Checkout

Complete the last page of the form to document the checkout of the SDI irrigation system.

SDI Installation Data

Complete and check the items listed—Provide documentation to support the installation procedures used, installed items, performance, and units installed.

Complete remarks as needed.

Checkout by—The person completing the checkout shall sign and date.

Audited by—The person reviewing the checkout documentation shall sign and date.