

NATURAL RESOURCES CONSERVATION SERVICE
DOCUMENTATION REQUIREMENTS FOR
SPRING DEVELOPMENT

CODE 574

Design Criteria

Design in accordance with the criteria listed in Conservation Practice Standard 574, Spring Development, and Chapter 12 of National Engineering Handbook Part 650 (NEH 650), *Engineering Field Handbook*. On the "Print Sheets and Links" sheet in the Spring Development Spreadsheet (SDS), other criteria can be located using the Helpful Links to Documents. The spring development should be installed where it is shown on the conservation plan map and location map.

Surveys

The extent of surveys and investigation required will vary depending on the location and type of spring being developed.

For fracture or tubular springs with a single opening and no collection system required, the survey should begin at the water source.

On springs requiring a collection system, it will probably be necessary to do some soil probing to determine the extent and location of the water-bearing strata. The log of the test hole(s) and their plan view location(s) should be shown on the plans.

All pipelines should be installed on a uniform continuous grade (without highs or lows) to prevent possible air lock.

Record the standard engineering notes on loose-leaf field notebook sheets (Forms NRCS-ENG-28 and NRCS-ENG-29), field note sheets (Forms KS-ENG-37 and KS-ENG-37a), or equivalent. Run a ground surface profile along the centerline of the proposed collection system lines to their juncture with the spring box or riser. Continue the profile from this point on the centerline of the pipe to the stock tank and extend to the proposed exit end of the overflow drain pipe from the tank. Also, profile from the spring box along the spring box overflow pipe to

the outlet. Take and record ground elevation shots at 50-foot intervals (stations) and at all significant breaks in grade that occur between the regular stations. Also, take elevation shots at the spring box or riser location, stock tank, the exit end of the overflow pipe from the tank, and the overflow pipe from the spring box.

Place flags at each station and at the location of the spring box or riser and stock tank.

In the SDS, refer to the Design Sheet Example on the "Design" sheet and the Profile Sheet Example on the "Profile" sheet for information that should be provided by the surveys.

It is recommended that at least one temporary bench mark be set as needed.

Locate and identify special conditions that may affect the design and installation of the spring development.

Safety procedures listed in National Engineering Manual (NEM) Part 503 should be strictly followed.

Layout

Generally, sufficient stations, alignment flags, and grade stakes will be set when the design survey is made to establish the location of the component parts of the spring development. In some cases, it will be necessary to set special reference stakes along the line after the design and prior to the spring development installation. These should be described in the survey notes.

In most cases, Natural Resources Conservation Service (NRCS) personnel will be present during excavation of the ditches; installation of the pipe; backfill of the collector lines; and installation of the spring box or riser, stock tank, and supply lines, valves, etc. The plans shall be corrected to show any adjustments or changes made in the location or elevation of any parts of the system during layout or construction.

On the "Quantities and Map" sheet in the SDS, complete the Layout by and Date blocks.

Design and Plans

Develop the design in accordance with the above Design Criteria section.

The SDS or equivalent sheets should be used to develop the design and plans.

Record information obtained from the surveys for design and layout on the "Design" sheet in the SDS and attach the survey notes as appropriate.

The final plans should include the following:

- A ground profile showing the pertinent elevations ("Profile" sheet of the SDS)
- A table of quantities and location map ("Quantities and Map" sheet of the SDS) that indicate size and type of pipe and other materials (cutoff wall material, spring box or riser, etc.)
- Other detail sheets as needed

On the "Quantities and Map" sheet in the SDS, include any special instructions needed for installation of the spring development in the Location Map and Remarks areas or attach a separate sheet. Sign the Approved by block and complete the Date block.

Checkout

On the "Quantities and Map" sheet in the SDS, complete the Installed Quantity column and add comments in Remarks.

On the "Profile" sheet in the SDS, complete the Checkout table, add comments in the Notes section, and make as-built changes if needed.

Sign the Checked by block and complete the Date block on each sheet.