



# CONSERVATION STEWARDSHIP PROGRAM

## CONSERVATION ENHANCEMENT ACTIVITY

E449I

### IWM - Year 1, Retrofit Equipment with Speed Control on Sprinkler Irrigation System

Conservation Practice 449: Irrigation Water Management

APPLICABLE LAND USE: Crop (Annual & Mixed), Crop (Perennial), Pasture

RESOURCE CONCERN: Water

PRACTICE LIFE SPAN: 1 year

#### Enhancement Description

This enhancement consists of retrofitting an existing sprinkler irrigation system to integrate variable rate irrigation (VRI) speed control where the technology is not present. The added functionality of VRI speed control equipment allows for enhanced water application precision, efficiency, and uniformity along the length of the sprinkler irrigation system by varying the irrigation system speed within the irrigation pass. Renovation of the existing sprinkler irrigation system utilizing this enhancement includes the installation of an upgraded control panel capable of speed control programming and global positioning system (GPS) technology capable of providing real-time field position. Utilization of the VRI speed control and GPS equipment will be for the entire irrigation season and be based on spatially identified parameters such as variations in past yield data, soils, crop growth, topography, or computerized irrigation scheduling recommendations. This scenario requires that the existing sprinkler irrigation system meets Conservation Practice Standard (CPS) 442 uniformity and efficiency requirements. System equipment is installed in year 1 with this scenario and scenario E449G or E449C is used in years 2-5.

#### Criteria

- Documentation that ensures the speed control devices are compatible with the existing sprinkler irrigation system.
- Detailed drawings on how the speed control and GPS devices will connect to the existing sprinkler irrigation system, operate safely, and be protected.
- Irrigation water management (IWM) plan that follows the NRCS Conservation Practice Standard Irrigation Water Management (CPS449).
- The installation includes the purchase and installation of speed control and GPS devices. Components necessary for retrofit depend on the type of devices are installed and sprinkler irrigation system being renovated, but should consist of speed control and GPS devices as indicated below:



- Speed control unit with percentage timer setting capable of varying the irrigation system speed within the irrigation pass. Sprinkler irrigation tower speed is controlled by contactor coil voltage sent out by the percentage timer within the control panel.
- Satellite-guided GPS technology mounted on the sprinkler irrigation system provides real-time end tower location, speed, and direction information to the control panel.

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### Documentation and Implementation Requirements

Participant will:

#### *Prior to implementation*

- Acquire an IWM plan meeting NRCS CPS Irrigation Water Management (Code 449) requirements.
- Develop a map delineating the location of the existing sprinkler irrigation system, speed control unit, satellite-based technology, and the fields they serve.
- Acquire NRCS approval of selected of selected speed control unit and satellite-based technology.

#### *During implementation*

- Ensure installation meets manufacturers recommendations.
- Provide documentation ensuring that the speed control device, GPS device, and supporting appurtenances allow the sprinkler irrigation system to operate safely and in the range of design operating conditions.
- Provide documentation of the protective structures meeting the requirements of the speed control and GPS devices. Ensure that the protective devices meet NRCS standards.
- Record each irrigation event, including the amount or depth of water applied, duration of the event, date of application, and any other requirements of the approved IWM Plan.

#### *After implementation*

- Copy of the record of each irrigation event, including the amount or depth of water applied, duration of the event, date of application, and any other requirements of the approved IWM plan.

NRCS will:

#### *Prior to implementation*

- Provide and explain NRCS Conservation Practice Standard Irrigation Water Management (Code 449) as it relates to implementing this enhancement.
- Provide and explain NRCS Conservation Practice Standard Sprinkler System (Code442) as it relates to implementing this enhancement.
- Provided additional assistance to the participant as requested.

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- Review and approve producer’s selected equipment

*During Implementation*

- Provide additional assistance to the participant as requested.

*After Implementation*

- Verify installation of the speed control devices, GPS devices, and supporting appurtenances are in accordance with manufacturer's specification.
- Verify that speed control and GPS devices are compatible with the existing sprinkler irrigation system.
- Verify implementation of the approved IWM plan by reviewing records kept during enhancement implementation.

**NRCS Documentation Review:**

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name \_\_\_\_\_ Contract Number \_\_\_\_\_

Total Amount Applied \_\_\_\_\_ Fiscal Year Completed \_\_\_\_\_

\_\_\_\_\_  
NRCS Technical Adequacy Signature                      Date



## SOUTH DAKOTA (SD) SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY

## CONSERVATION STEWARDSHIP PROGRAM

### E449I

#### **Additional Documentation Requirements for SD**

In addition to the documentation requirements specified in the national job sheet E374A, the following additional documentation requirements apply in SD:

- Approval for documentation must be given by the person who reviewed and approved the Irrigation Water Management plan, or his/her designee that holds adequate Job Approval Authority for 449, Irrigation Water Management.



## SOUTH DAKOTA (SD) SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY

## CONSERVATION STEWARDSHIP PROGRAM

### E449I

#### **Additional Documentation Requirements for SD:**

In addition to the documentation requirements specified in the national job sheet E449I, the following additional documentation requirements apply in SD:

- Approval for documentation must be given by the person who reviewed and approved the Irrigation Water Management plan, or his/her designee that holds adequate Job Approval Authority for 449, Irrigation Water Management.