



## CONSERVATION ENHANCEMENT ACTIVITY

### E533A

# CONSERVATION STEWARDSHIP PROGRAM

## Advanced Pumping Plant Automation

### Conservation Practice 533: Pumping Plant

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

**RESOURCE CONCERN:** Water

**PRACTICE LIFE SPAN:** 1 year

#### Enhancement Description

This enhancement consists of installing a control device to a pump station that allows the user to remotely monitor and operate the pump station based on field measured data. Pumping stations may have either a combustible or electric power unit that are compatible with the control device or sensor. These devices/sensors collect field-measured data and provide this data in real time to the landowner to make irrigation decisions and adjustments to the pump operation. These decisions should be made in conjunction with an irrigation water management plan. Field measuring devices may be part of the IWM plan, but additional devices can be installed as part of the enhancement such as water level, fuel level, pressure, or speed control sensors.

#### Criteria

- Documentation that ensures the control devices is compatible with the exiting pump station and irrigation system
- Detailed drawings of how the control device will connect to the existing pump station
- Protective structure/mechanism
- Irrigation water management (IWM) plan that follows the NRCS Conservation Practice Standard Irrigation Water Management (CPS449)
- Components necessary for automation depends on the type of pump installed, but both electric and combustible system should have a flow meter as indicated below:
  - Electrical power unit- flow meter with data logger and telemetry, necessary circuit boards and protections, VFD (if applicable), antenna, modem, housing, and other appurtenances as applicable



- Diesel power units- flow meter with data logger and telemetry, necessary circuit boards and protections, antenna, modem, housing, fuel use meter, and other appurtenances as applicable.

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**Documentation and Implementation Requirements**

Participant will:

*Prior to implementation*

- Completed IWM plan, documenting guidance and landowner decision using State specific protocol
- Map delineating the location of the installed pumping plants, soil moisture sensors, electronic water level sensors, pipeline networks, permanent flow meters and fields they serve. All components should be capable of telemetry
- Digital/Printed photography of installed components and GPS location

*During implementation*

- Provide documentation ensuring that the control device and supporting appurtenances allow the pumping station to continue to operate safely and in the range of designed operating conditions
- Provide documentation of the protective structure(s) meet the requirement of the control device and supporting appurtenances. Ensure that the protective structures meet NRCS standards
- Record each irrigation event, and daily soil moisture/water level (if applicable) throughout growing season.
- Apply irrigation water based on irrigation scheduling method selected to meet the crop's needs and maximize irrigation water efficiency.
- Measure and record the amount of water used to irrigate as it comes onto the farm and is applied to each field.

*After implementation*

- Copy of the record each irrigation event, and daily soil moisture/water level (if applicable), and rainfall throughout growing season.

NRCS will:

*Prior to implementation*

- Provide and explain NRCS Conservation Practice Standard Pumping Plant (Code 533) as it relates to implementing this enhancement
- Provide and explain NRCS Conservation Practice Standard Irrigation Water Management (Code449) 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

After Implementation

- Verify installation of the control device and all supporting appurtenances
- Verify that the control device is compatible with the pumping station and the range of operation condition
- Verify implementation of irrigation water management 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