



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

Design Approvals & Acknowledgements:

Design Approval	Date	Job Approval Authority
Designed by:		
Approved by:		

Client's Acknowledgement Statement:

The client acknowledges:

- I have received a copy of the specification and understand the contents and requirements.
- It is my responsibility to obtain all necessary permits and/or rights and to comply with all ordinances and laws pertaining to the application of this practice.
- I will not begin installation of this practice until I have received appropriate approval to do so. I understand NRCS also has Federal and state laws to comply with that may take some time to address (e.g. cultural resources).

Client's Signature	Date

Certification Documentation:

	Field Evaluation: Post-treatment inventory, measurements, notes, as-built, and supporting documentation (document completion in conservation plan), as required.
	Map(s): Including field numbers, fields treated, and units treated (may document on conservation plan map), as required.
	Photos or other supporting documentation (e.g., seed tags, soil tests, receipts, invoices, spray records, fertilizer records, etc.)
Brief Description of Work Accomplished (types of equipment used, date of application, extents and quantities installed, etc.)	

Certification Statement:

The employee certifies the implementation of this conservation practice:

- Meets the purpose, general criteria, and any required additional criteria as documented in the conservation practice standard and/or enhancement sheet.
- Meets the specifications contained herein and is complete.
- Conforms to my existing Job Approval Authority controlling factors and levels.

Name	Date	Job Approval Authority

Field Level Certification – For multiple applications of this design.				
Land Unit/ Contract Item Number	Date	Unit(s)	Amount Installed	Certifier