

NATURAL RESOURCES CONSERVATION SERVICE
VIRGINIA CONSERVATION PRACTICE STANDARD
PUMPING PLANT FOR WATER CONTROL

(No.)

Code 533

DEFINITION

A pumping facility installed to transfer water for a conservation need, including removing excess surface or groundwater; filling ponds, ditches, or wetlands; or pumping from wells, ponds, streams, and other sources.

determined from appropriate technical studies. The size and number of pumps and their performance requirements shall be determined on the basis of the conservation requirements of the system. The total head shall be determined for critical operating conditions, taking into account all hydraulic losses. Automatic controls shall be included in the plans as required.

PURPOSE

To provide a dependable water source or disposal facility for water management on wetlands or to provide a water supply for such purposes as irrigation, recreation, livestock, or wildlife.

POWER UNITS

The power units shall be selected on the basis of costs, operating conditions, conservation needs, and objectives, including need for automation. The power unit shall be matched to the pump and be capable of operating the pump effectively within the range of operating conditions. The horsepower requirements, pump efficiency, and total head on the pump shall be computed.

CONDITIONS WHERE PRACTICE APPLIES

Wherever water must be pumped to accomplish a conservation objective. It is especially applicable for maintaining critical water levels in existing swamps, marshes, or open water and for providing water sources for newly constructed wetlands and ponds.

SUCTION AND DISCHARGE PIPES

The size of suction and discharge pipes shall be based on studies of efficiencies and effects on costs and operations. The arrangement and length of discharge pipe shall be based on the need for recovery of head through syphonic action, and for delivery of water in keeping with conservation and environmental objectives. Gates, valves, pipe connections, discharge bays, and other protective works shall be installed, as needed, for satisfactory plant operation.

CRITERIA

The efficiency of units, type of power, quality of building, automation, and accessories installed shall be in keeping with the value and importance of the system and shall accomplish the conservation and environmental objectives.

ENVIRONMENTAL CONCERNS

Planning and implementation of this practice will be preceded by an environmental evaluation using the "Environmental Evaluation Data Sheet", Form VA-EE-1, and related guidelines

PUMP REQUIREMENTS

The capabilities, range of operating lifts, and general class and efficiency of equipment shall be

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533-VA-2

found in GM-190, Part 410 (Virginia Amendments).

BUILDING AND ACCESSORIES

The design of the plant and associated housing, if required, shall consider the need for protecting equipment from the elements, malicious damage, and fire and the need for equipment maintenance and repairs. The appearance of the plant shall be in keeping with its surrounding environment and its importance or value.

The foundations shall be designed to safely support the loads imposed. Sheet piling or other measures shall be used, as required, to prevent piping beneath the foundation.

Pumps may be mounted in the open, on piling, or in a well or pit.

Suction bays (or sumps) shall be designed to conform to the hydraulic characteristics established by the pump manufacturer.

The discharge bay or connection with distribution system shall be ample to meet hydraulic and structural requirements. Provisions for repair or removal of pumps and engines shall be provided. Trash racks shall be provided, as needed, to exclude debris and trash from the pump.

All structural features and equipment shall provide adequate safety features to protect workers and public against injury.

CONSIDERATIONS

- Consider the effect of the pumping plant on upstream and downstream quantity.
- Sediment production caused by erosion during construction should be assessed.
- Possible effects on surface and groundwater of spilled fuels and lubricants used to operate and maintain the facility should be considered.

PLANS AND SPECIFICATIONS

Plans and specifications for constructing pumping plants for water control shall be in keeping with this standard and shall describe the requirements for properly installing the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

All structural components and pumping equipment shall be inspected on a regular basis. Repairs and maintenance shall be performed as needed.

REFERENCES

1. Midwest Plan Service Structures and Environment Handbook, MWPS-1.
2. USDA, NRCS, Engineering Field Handbook.
3. GM-190, Part 410 (Virginia Amendments).

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Approved Practice Narrative

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533 D1 Pumping Plant for Water Control:
A water pumping system capable of supplying adequate quality and quantity of water shall be installed. It will be in keeping with this standard and shall be in accordance to all local, state, and federal laws, guidelines, and permits.

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