



The Variable Flow Tailwater Recovery System was developed to address changes in furrow irrigation runoff under surge irrigation, irrigation runoff from relatively small irrigated fields, and the impact that excavated pits have on the hydrology of adjacent or downstream wetlands.

The 5 HP motor is turned on and off by water level sensors which are adjusted to levels which keep the ends of the field dry and provide for adequate storage capacity. The 300 gpm pump returns runoff water to the top of the field or to adjacent fields. The pump and motor sit on the lid of a 10 ft. long 72 inch diameter corrugated metal pipe.

The float is connected to a butterfly valve in the outlet pipe. As the water level drops, the valve closes to reduce the pump capacity. The float linkage also adjusts to control both the maximum and minimum pumping rate. The capability to adjust flow rate and water storage capacities allows adaptation of the system to most field and irrigation conditions.

The system was developed as an alternative to conventional tailwater recovery pits. Excavated pits are designed to store a minimum of an acre foot of irrigation runoff water which would be stored and pumped back to the field. While the pits improved irrigation efficiency and water management capabilities, they impacted the hydrology of wetlands.

Late winter and early spring runoff would first have to fill empty pits in the wetland watershed before runoff could flow past them to wetlands. During dry migration seasons, the pits would capture limited runoff, leaving adjacent and downstream wetlands dry.

The Variable Flow Tailwater Recovery Systems provide both improved irrigation water management and restored wetland hydrology. The systems are comparable in cost, have less maintenance requirements, occupy less space in the field, and are adjustable to changing field and irrigation conditions.

The partnership which collaborated in the system design, development, demonstration, and operation included: Ace Irrigation Manufacturing Co., Kearney NE., The US Fish & Wildlife Service, Tri-Basin, Central Platte, and Upper Big Blue NRD's, the Natural Resources Conservation Service, landowners Marty Damrowe, John Overing, and Mick Reynolds, Central NE Public Power & Irrigation District, and the Rainwater Basin Joint Venture.