Sustainable Conservation

On-farm Recharge Pilot Projects Case Study

Grower: Don Cameron, Terranova Ranch

Crop: On-Farm Recharge Basin System

Location: Helm, Fresno County

Project Description

Don Cameron, general manager of Terranova Ranch Inc., has been planning and building an on-farm recharge basin storage system for more than five years. Despite the long planning and construction phase, he is beginning to see promising results because of the massive amounts of rainfall and snowmelt in 2023 that have sparked a flooding emergency in the area.

The system comprises three on-farm recharge basins, each having a capacity of 50–60 acre-feet of water storage. These basins are unlined, which allow them to function as recharge basins while also serving as storage sites from which to convey on-farm recharge water to surrounding fields. He is offering the stored basin water to his farm neighbors at cost. Mr. Cameron spoke of his desire to divert enough water during high rainfall years such as 2023 to recharge Terranova Ranch and neighboring farms in the Kings subbasin. His goal in 2023 is to recharge 30,000 acre-feet, which he thinks he will reach.

The following pictures were taken during a recent tour of Terranova Ranch in April 2023. They document the water infrastructure work involved in the construction of this unique on-farm recharge basin system. Operations require considerable work in the field to strategically coordinate water conveyance across the farm. Staff required training in the coordination of opening and closing valves and gates as water pumps were turned on and off. Mr. Cameron spoke about the many adjustments for labor required for this system, and he stated, "The rewards are worth it."

Pump used to divert water from the Kings River at peak flow levels. Maximum pump capacity of 12.5 acre-feet per hour (151 cubic feet per second).

Two of three on-farm recharge unlined recharge basins, each with storage capacity of 50–60 acre-feet. Mr. Cameron has observed a significant increase in shorebird activity in and around the recharge basins.

Water in an unlined canal conveyance system with pistachios orchards on either side.

The diversion point of water on the Kings River North Fork canal into the Terranova Ranch.

Four turnout gates on the Kings River diverting water into the Terranova Ranch canal system.

Mr. Cameron, using his computer telemetry to control the height of the turnout flood gates.

Pumping water from internal canal into a pistachio orchard through an intricate conveyance system.

Water metered and pumped from internal canal into a pistachio orchard.

Water is being pumped using diesel power take-off (PTO) motors from the basins into the pistachio orchards and wine-grape vineyards using thousands of feet of pipe across the entire ranch to convey water to different plantings for on-farm recharge.

Long length of pipe used to convey water from internal unlined canal ditches with water pumps into a pistachio orchard.

On-farm recharge in pistachio orchard (April 26, 2023) showing complete spring leaf out and trees already in full bloom.

Recharge on this pistachio orchard is the result of a well-planned and well-constructed farm infrastructure for an on-farm basin storage and water conveyance delivery system.