

# Agricultural Pumping Efficiency Program



## Helping California...

*“We found the Program to be quite beneficial by improving pump efficiency and reducing operating costs. Sutter Mutual will use it for all of our irrigation pumps in the future.” - Fred Schantz, Operations Manager, Sutter Mutual Water Company.*

### PROJECT SUMMARY

**Client:** Sutter Mutual Water Company  
Robbins, Sutter County  
Fred Schantz, Operations Manager

**Utility:** PG&E / Electricity

**Project:** Repair 48 inch diameter Byron-Jackson propeller pump installed in 1940

**Consulting Engineer:** MBK Engineers, Sacramento, Gilbert Casio P.E.

**Pump Test Company:** Power Hydrodynamics, Modesto, Bill Power, owner

**Contractor:** Durham Pump, Durham, Tom Martin, president

**Project Cost:** \$219,000

**Incentive Grant from Agricultural Pumping Efficiency Program:** \$15,000

**Annual dollar/energy savings:** \$14,745 / 134,000 kWh

**Increase in Water Flow:** 4,900 gpm on average (22 ac-ft per 24 hours)

**Simple Payback:** 14 years

Contact the Agricultural Pumping Efficiency Program at (800) 845-6038 for information on how we can help your water district save money and energy.

## What They Say About the Ag Pumping Efficiency Program...

Sutter Mutual Water Company is located about 32 miles northwest of Sacramento close to the small farm community of Robbins in what is commonly referred to as the Sutter Basin. A total of 46,746 acres is farmed by 154 individual farming operators with riparian water rights on the Sacramento River. Rice, wheat, corn, safflower, beans and cannery tomatoes are the dominant crops grown in the Sutter Basin.

Surface drainage water is removed from the Sutter Basin by Reclamation District 1500 which maintains the levees and discharge pump station.

Sutter Mutual typically pumps about 200,000 acre-feet of water annually for crop irrigation from four plants making it the second largest diverter on the Sacramento River.

The original 48 inch diameter 300 horsepower Byron-Jackson irrigation propeller pump was installed in 1940 at the Company's Tisdale pumping plant. It was replaced with a new 54 inch Johnson impeller and bowl in early 2004. The new unit produces 74,000 GPM (329 ac-ft/24 hours) from a pumping water level of 3.1 feet against a Total Dynamic Head of 7.7 feet drawing 207 input horsepower. The unit's Overall Plant Efficiency is 69.95%.

'We decided to pull Pump Number 2 in the Fall of 2003 after it developed a serious vibration during the summer said Fred Schantz, Sutter Mutual's Operations Manager. "Bill Power had tested the unit the year before so we had a good idea as to what the efficiency was. We decided to have Durham Pump pull the unit and see if it could be rebuilt. The unit qualified for cost-sharing under the Agricultural Pump Efficiency Program because it had been tested in the previous twelve months. That helped with the final cost. "

Fred consulted with Steve Greenwood of Durham Pump and Jim Love of Water Ways both in Durham and decided to replace the 48 inch Byron-Jackson with a 54 inch Johnson impeller and bowl fabricated in Texas because of availability issues. The Johnson pump required the fabrication of a new 54 inch discharge elbow, installation of 5 inch stainless steel shaft, 8 inch tubing and an 8 inch bronze bearing. All of the heavy-duty fabrication work was done at Love's pump and machine shop in Durham.

"We had an additional 10,000 acres of rice in the 2004 season Schantz indicated; fortunately we had Number 2 back on-line and in full operation so it helped us pump the amount of water required on a timely basis."

"The Agricultural Pump Efficiency Program can be beneficial financially to water agencies and reclamation districts" commented Tom Martin, president of Durham Pump. "Not only do agencies save money on power costs when the pumps are operated efficiently but they have reserve capacity if it is needed. We recommend it to all of our customers."



**Fred Schantz, Sutter Mutual Water Company and Steve Greenwood, Durham Pump inspect new Pump #2 54" Johnson Pump Bowl and Impeller**