

# IRRIGATION NEWS

## What El Nino Means to Kings River

There has been a great deal of discussion about El Nino lately, and how it can influence California's weather patterns. But just what is El Nino and how does it influence the weather in California? And what does its return mean for the Kings River watershed?

El Nino, simply put, is a condition in which the surface temperatures of the ocean waters off the coast of South America are higher than normal. While technically accurate, what actually happens is more complex. Every four to 12 years, warm water from the western Pacific Ocean is brought eastward due to a relaxation of the normal wind patterns across the equatorial Pacific, cutting off the upward currents of cold water from the ocean bottom.

The presence of this warm water increases the amount of convection that occurs, thus changing the high- and low-pressure patterns present in the atmosphere. Depending on the amount of warm water present, the pattern can be mildly wetter than normal, or it can be considerably so. This convection influences the paths of the jet streams within the atmosphere, which can bring more sub-tropical moisture north to interact with the cold air coming south, or it can inhibit the movement of this needed moisture.

According to current conditions, a weak El Nino exists within the eastern Pacific Ocean, but the experts are split as to its impact on the western United States. Indications are that the water is warmer than normal, but not significantly so.

So, what does this mean for the Kings River? Typically, in years in which El Nino conditions exist, storms that normally track well to our north move southward, increasing precipitation within the central Sierra Nevada. Typically, these storms make the area a little warmer, potentially producing more rain

than snow. Patterns such as this can increase the storage behind Pine Flat dam earlier than normal.

Currently, the storage within Pine Flat Reservoir is tracking about even with the 2003-2004 water storage year. This is vast improvement since August, when the lake was almost 200,000 acre-feet below last year's reading.

The normal snowpack at the eight Kings River watershed snow sensing sites runs from a low of 25.9 inches of water to a high of 34.6 inches water content (not snow depth) when measured April 1st (the overall average is 31.4 inches). These readings are later verified by field sampling during snow surveys in February and April. As of the time of this writing, December 14th, the Kings River snow pack is running approximately 29.6 percent of the April 1st average; the date the water content normally peaks within the Kings watershed. As a rule of thumb, the average should be at 50 percent around January 15th.

Snowmelt typically begins in March, with peak inflows into Pine Flat Reservoir occurring from April through July. In a normal year, a runoff of approximately 1.7 million acre-feet can be expected.

Early rains are no guarantee of getting an above-average rainfall season. The Kings River Water Association staff looked at the last 50 years worth of data, and of the 10 wettest years on record through mid-November, only five ended up being above average rainfall years. Of the 10 driest years, four finished above normal and six below.

The Kings River watershed is off to a good start for the 2004-2005 season, but continued rain is required to ensure adequate surface supplies for the 2005 irrigation season. ♠

### IRRIGATION SYSTEM AND PUMP EVALUATIONS

KRCD's On Farm Program is available to evaluate your irrigation and pumping systems at no cost to you. If you had any irrigation related problems during the course of the season and want to isolate the cause, give Eric a call at (559) 237-5567 extension 117. Pump tests typically take 30-60 minutes to complete; irrigation evaluations run approximately 3 hours for most systems. ♠

**Call TODAY (559) 237-5567 ext 117.  
It is a NO COST service to you.**

# Off Season Irrigation Maintenance Tips

Now that the rains have come and irrigation systems are quiet, the time is here to perform the maintenance required to keep your system operating at peak efficiency. As with any maintenance project, the key is to properly prioritize the problems observed and what the desired outcome should be. Because of the variety of systems available to growers within the Kings River Conservation District, the discussion will be specific in areas that are common to all, and general in others.

Most irrigation systems begin with the pump. The cost of pumped irrigation water is determined by the operating efficiency of the pumping plant, in that an efficient pump moves more water in less time at a lower cost than an inefficient one.

## Typical Maintenance for Well Pumps during Off-Season

1. Pump performance evaluation. This provides hard numbers to base future decisions upon. Data includes power consumption, flow rate, draw down, total lift, and plant efficiency. Tests done in the fall show the worst-case condition of the well, as the aquifer is at its most depressed levels.

2. Check lubrication system. Recalibrate the dripper to ensure that proper rate of oil is being supplied. Four to six drips per minute per 100 feet of shaft length is recommended.

3. Grease any available fittings. This prevents moisture infiltration into exposed bearings and seals.

4. Consider the quality of the water pumped. Is sand or other fine matter present? How long has such material been present? The longer such materials are present, the greater the wear on the pump impellers, leading to decreased flow rates.

Have the electric motor cleaned of excess oil or dust that have built up on the surface. This will increase the motor's ability to cool itself. Heat damage is a primary cause of motor failure.

## Irrigation System Maintenance

For those growers who use pressurized irrigation systems, a thorough inspection of the system is warranted

at least once per year. Look for leaking laterals, plugged emitters, unusual patterns of water distribution, obvious differences in rotational speeds for sprinkler heads, evidence of sand wear in sprinkler nozzles, or other items that appear unusual. Repair as needed.

Check the filter station for pressure loss levels. Typically, pressure loss from intake to discharge should be three to five psi, regardless of filter type. Inspect screen filters for breaches or plugging and replace if necessary.

In sand media filters, run a manual backflush on the tanks or program the controller to double the backflush time from normal. If possible, throttle down the discharge to the field to maximize the pressure available to clear the media. Recheck pressure differential for improvement.

Sand media should be inspected on a regular basis. Media should be sharp edged, and uniform in size. If the media appears to be worn, replacement is recommended. Depending upon the frequency of backflushing, media typically has a four to ten year life expectancy.

Once the filters are clean, flush the distribution system within the field, starting with mainlines and progressing to the laterals. If possible, clean the laterals in small blocks, so as to maximize the velocity of the water within the lines. Repeat as necessary.

Shocking the system with acids or chlorine is also recommended during this time, as the grower can leave the material within the lines longer, thus maximizing the efficacy of the treatment.

For surface systems, run the system in such a way as to maximize the pressure and flow at the far end of the system to flush out any sands from the concrete pipes. Sand reduces the available volume within the pipe system. Open the valves at the far end of the system, start the pump, and then close valves until only the ones at the end are open or the standpipe overflows. This should move all the sand to the open valve and out into the field. If the pump is the source of the sand, this procedure will clear most of the sand, but not all. ♠

## AGRICULTURAL DISCHARGE WAIVER SIGNUPS CONTINUE

If you apply irrigation water to your agricultural property, you are subject to the regulations set forth by the Agricultural Discharge Waiver. If you have not already selected your method of compliance (Individual Compliance or Coalition Member) you need to make your decision soon. The Regional Board is preparing to conduct surveys of growers as a first step towards enforcement of the regulations. Coalition membership is a NO COST option to you, so call (559) 237-5567 and request an enrollment form today. You can also download the form directly from our website. Go to [www.krcd.org](http://www.krcd.org) and click on the Coalition Membership Form link. ♠

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