

Memorandum

To: Dave Tuthill, Allen Merritt, Hal Anderson, Rick Raymondi, Sean Vincent,
Tim Luke
From: Ken Neely
Date: 5/27/2008
Re: Twin Falls Geothermal Update for Calendar Year 2007

Withdrawals

The total withdrawal for the Twin Falls geothermal system in 2007 was 9,688 acre-feet, which is the largest withdrawal since records began in 1990 (Figure 1). Total withdrawal has been increasing steadily since 2003. The five-year average annual withdrawal for the time period from 2003-2007 was 9,237 acre-feet.

The total withdrawal calculation for 2007 has some uncertainty associated with it because of problems with the Pristine Springs totalizer during the year. First, the totalizer was rolling over about every 22 days. Since the well was not visited that frequently by IDWR, it cannot be determined how many times the totalizer rolled over in the year. Recently, the totalizer was adjusted to eliminate the frequent rollover problem. Secondly, even if the totalizer readings didn't have the rollover problem in 2007, they would still be suspect because, as noted in last year's report, the instantaneous discharge readings were estimated to be about 10% too high. A calibration check by IDWR in early February 2008 showed that the instantaneous readings were about 3% too high. Based on the information available, I reduced the average instantaneous discharge readings by 3% for 2007, and used this number to calculate a volumetric withdrawal amount.

Individual withdrawals by the geothermal users are shown in Figure 2.

Water Levels

The Twin Falls geothermal system appears to have been in a state of equilibrium from 1995 to about 2000. However, since 2000, water levels have declined in all three wells that are monitored regularly: College of Southern Idaho (CSI) #1, CSI #2, and the USGS Filer Test (Figures 3-5). In these wells, water levels reached their lowest recorded measurements in 2007. From 2000 to 2005, the average annual decline in water levels for these three wells was 1.5 feet. In 2006 and 2007, the average declines were 4.3 and 5.2 feet, respectively. The increases in water level declines for 2006 and 2007 are shown in Figure 6.

Water level declines in the Filer well have occurred fairly uniformly throughout the calendar year, as indicated by the overlying plots of annual hydrographs (Figure 7).

Conclusions and Recommendations

The Twin Falls geothermal system is under stress as indicated by the water level trends in the CSI #1, CSI #2, and USGS Filer wells. The decline in CSI #2 in 2007 is of particular concern. Monitoring data with high degrees of confidence are critical for determining if the water level declines are being caused by increased withdrawals, discharge exceeding recharge, or some combination of these two factors. The following steps are recommended:

1. Discharge calibration checks be conducted at all four of the geothermal systems in the Twin Falls area (College of Southern Idaho, McCollum, Pristine Spring, and Twin Falls High School) on an annual basis.
2. Withdrawal calculations, and updates of all graphs be performed semi-annually by IDWR State Office (Ken Neely), and the results sent to IDWR State Office and Southern Regional Office.
3. Resource management options such as conservation and re-injection should be investigated.

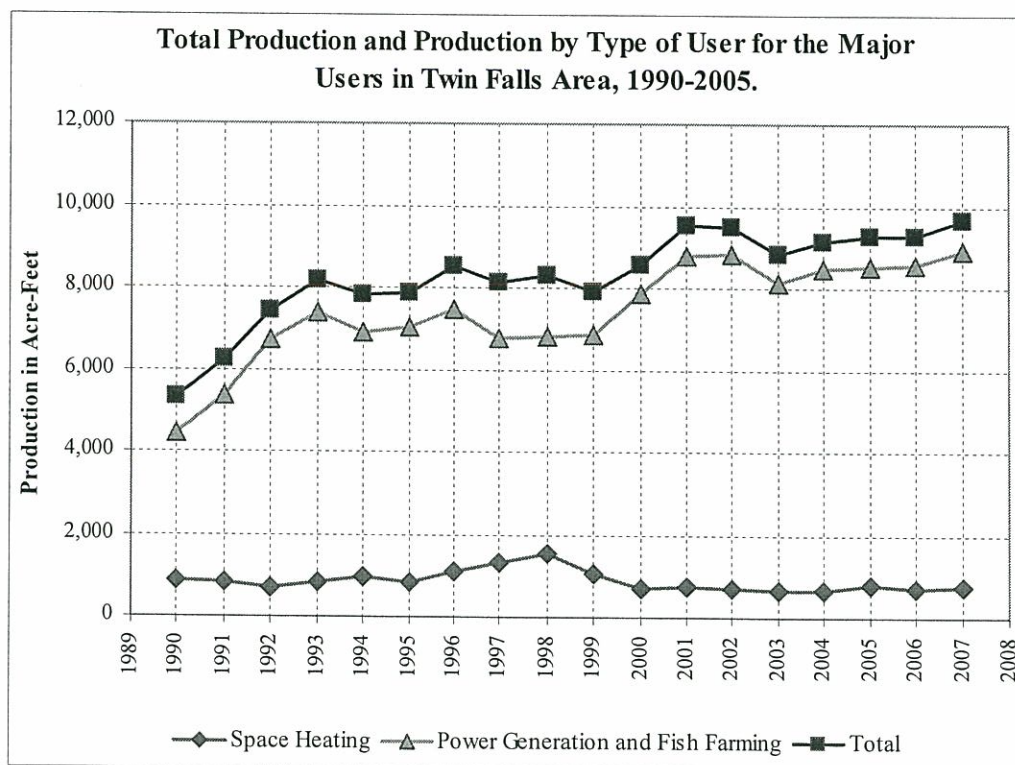


Figure 1. Total withdrawals for the Twin Falls geothermal system, and withdrawals by the two major types of uses.

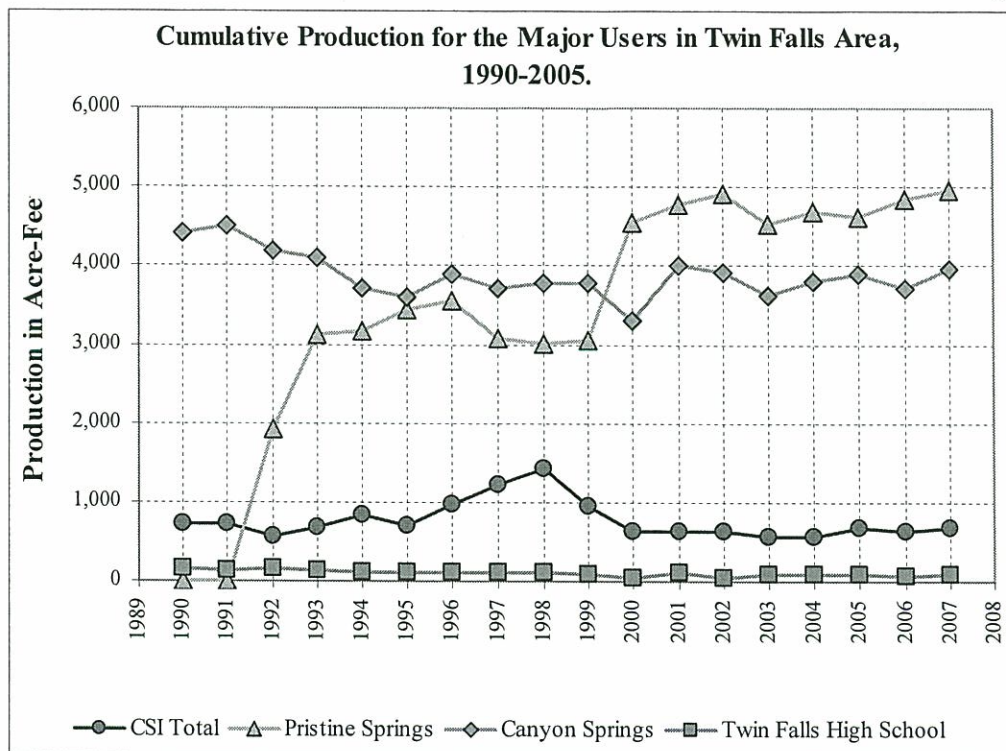


Figure 2. Geothermal withdrawals by individual producers in the Twin Falls system.

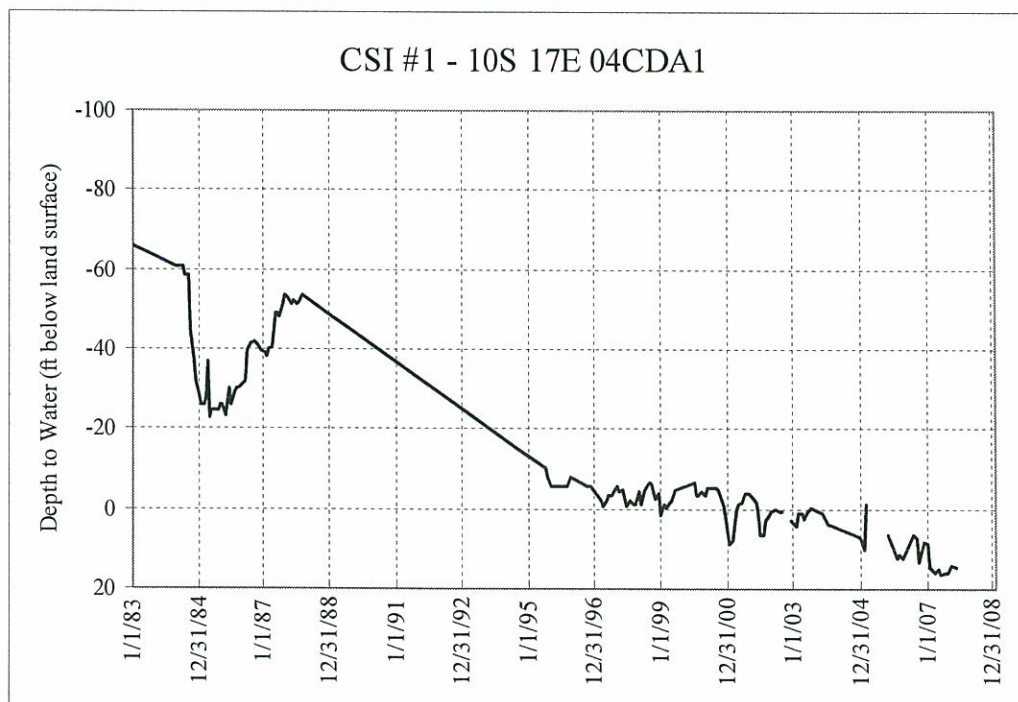


Figure 3. Hydrograph for the College of Southern Idaho #1 well.

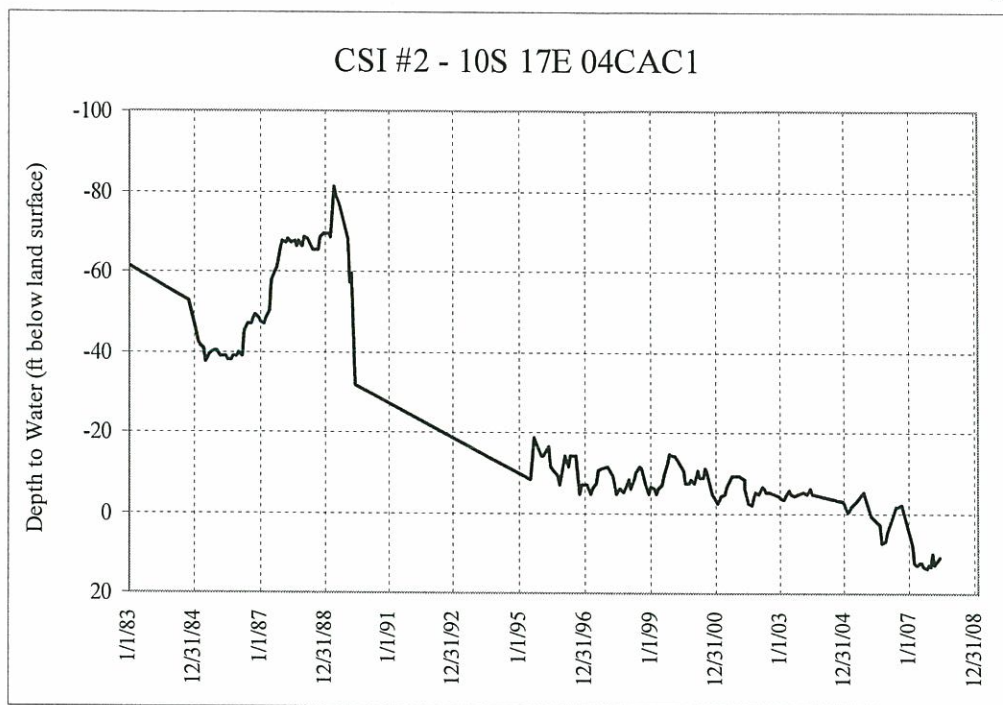


Figure 4. Hydrograph of the College of Southern Idaho #2 well.

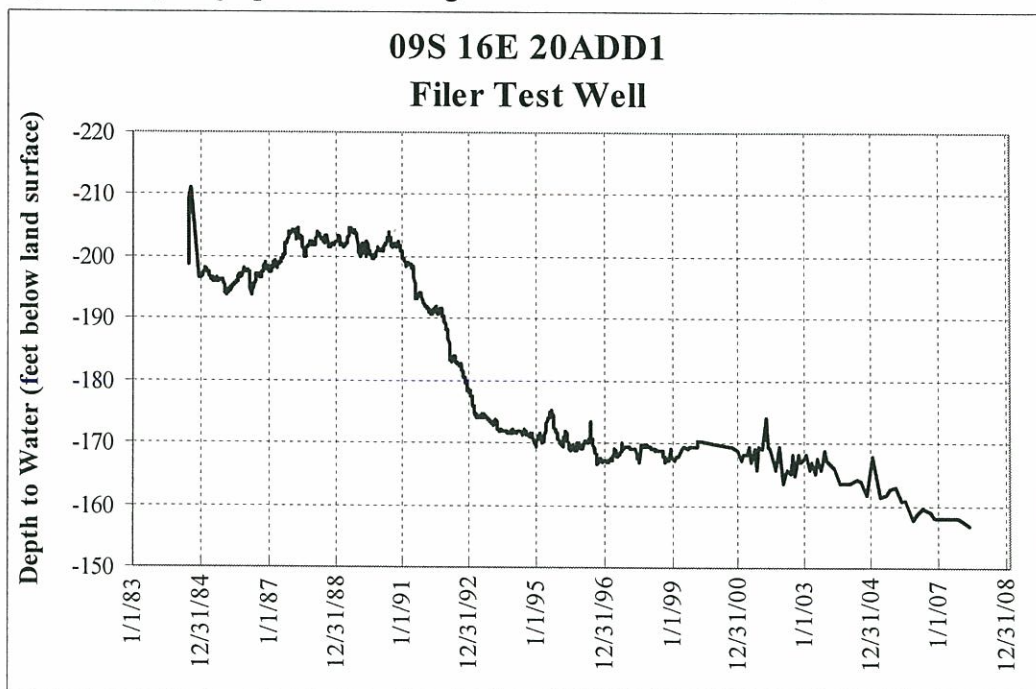


Figure 5. Hydrograph for the Filer Test well.

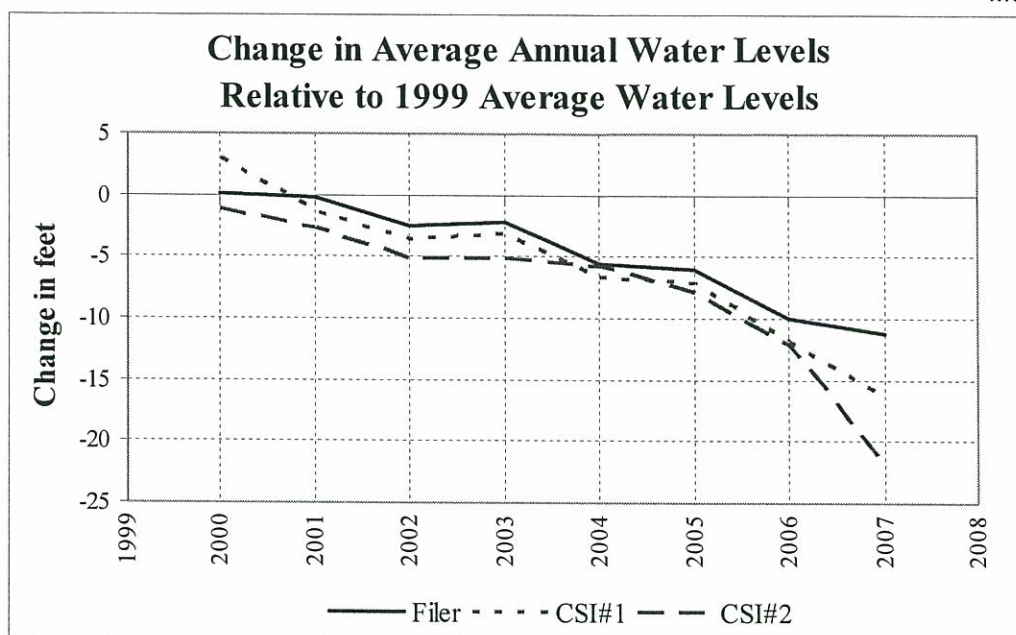


Figure 6. Changes in the average annual water levels in the Filer, CSI #1 and CSI #2 wells, relative to the average water levels in 1999.

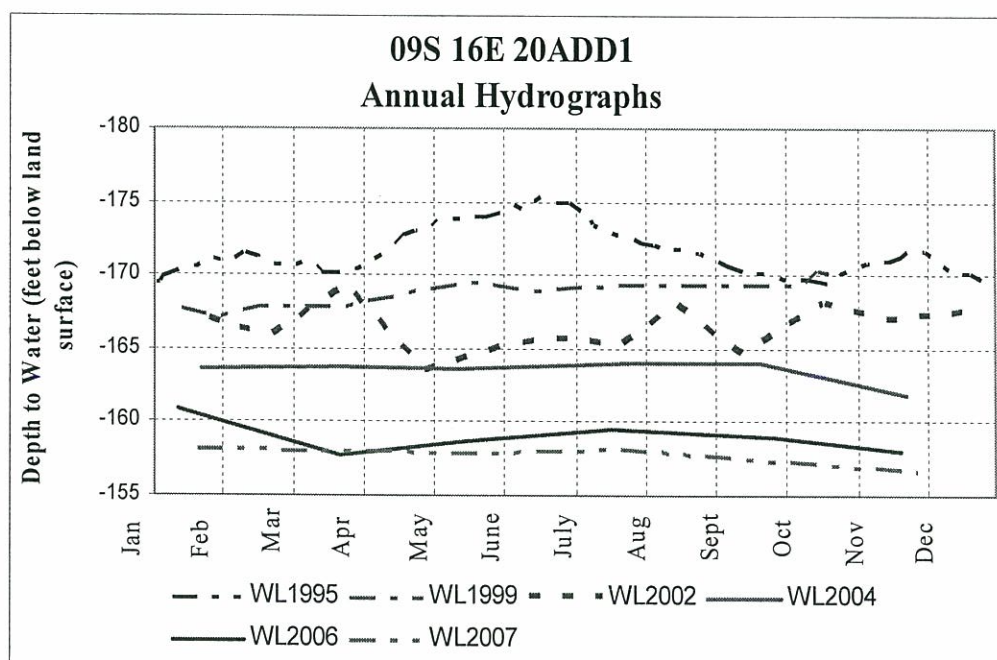


Figure 7. Annual hydrographs for the Filer Test well for select years.