Twin Falls Low Temperature Geothermal Moratorium Area Update, 2015

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March 3, 2016

There are 9 low-temperature (> 85 degrees Fahrenheit) geothermal wells in the Twin Falls Geothermal Moratorium area, plus the Filer Test well which has "warm water" temperatures (greater than ambient but less than 86 degrees Fahrenheit) (Figure 1). Currently, six of these wells are being monitored. IDWR (Southern Region) collects operating pressure, temperature, flow rate, and totalizer readings at the Pristine Springs, Canyon Springs, and Twin Falls High School wells on a monthly basis. The College of Southern Idaho (CSI) collects operating pressure, shut-in pressure or water levels, temperature, flow rate, and totalizer readings at their two wells on a monthly basis. IDWR (State Office) collects shut-in pressure readings at the Filer Test well a few times a year.

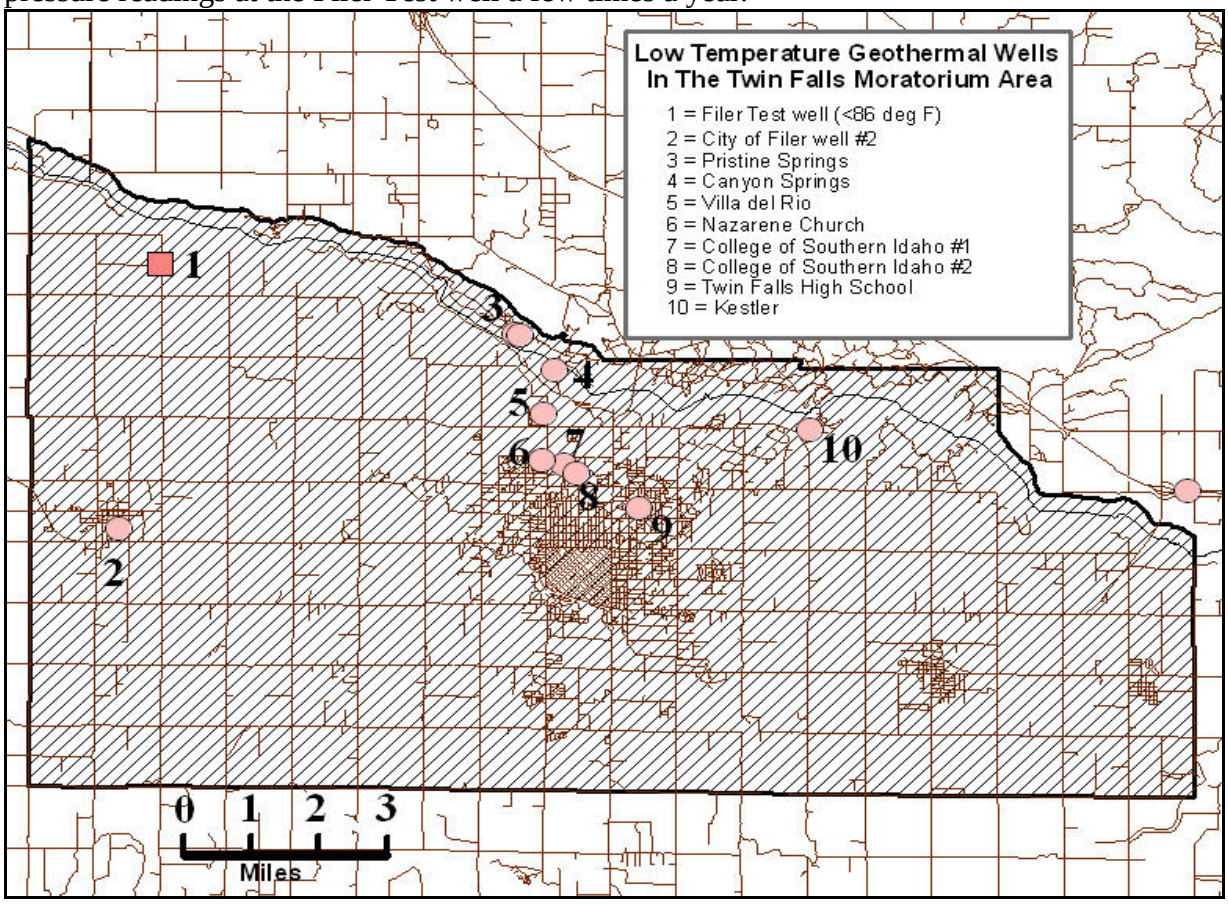

Figure 1. Low temperature geothermal wells in the Twin Falls Moratorium area.

Withdrawals

The total withdrawal for the Twin Falls geothermal system in 2015 was 7,302 acre-feet, which was 145 acre-feet more (~2%) than the withdrawal in 2014. The increase in withdrawals in 2015 is a slight departure from the declining trend in withdrawals from 2011 to 2014 (Figure 2). Individual withdrawals for each geothermal user are shown in Figure 3. The changes in withdrawals (acre-feet and percentages) from 2014 to 2015 were:

College of Southern Idaho	+75 acre-feet	+13%
Canyon Springs	+87 acre-feet	+3%
Twin Fall High School	-19 acre-feet	-27%
Pristine Springs	+2 acre-feet	+<1%

Water Level Analysis

Water level data have been collected historically at the two CSI wells, and the Filer Test well (Figure 1). The Filer Test well was not measured from the fall 2012 until the fall of 2015 because the well head was leaking. The leak was fixed in 2015, and one measurement has been made since the repair (Figure 4).

The CSI wells are shut in for water level readings on a monthly basis. The water levels in the CSI wells declined about 60 feet from the late 1980's to the mid 1990's (8.6 feet per year) (Figure 5). Then, the water levels declined about 35 feet from 1995 to 2008 (2.7 feet per year), followed by 20 feet of increase from 2008 through 2010 (6.7 feet per year). Since 2010, water levels in the CSI wells have declined an average of 1.9 feet per year. CSI #1 had a decline of over 11 feet from July 2014 to March 2015, and the water levels continued to be significantly below their 2014 levels throughout the rest of 2015. CSI #2 had no decline during the July 2014 to March 2015 time period. Furthermore, CSI #1 and CSI #2 dropped 7 feet and 10 feet, respectively, from October 2015 to January 2016. The changes in the average annual water levels in the CSI wells and the Filer Test well are shown in Figure 6.

Figure 7 shows the water level and withdrawal data over the last 30+ years.

Recommendations

The following action items for 2016, and the responsible parties, are:

1. Re-assign Filer Test well from IDWR State Office to IDWR Southern.
2. Determine the feasibility for installing a pressure transducer on the Filer Test well (IDWR).
3. Continue collecting monthly data at the CSI wells (CSI), and the Pristine Springs, McCullum and Twin Falls High School wells (IDWR).
4. Conduct calibration checks on all flow meters (IDWR).
5. Repair or replace any meter that fails within one month of identifying the failure. (Water Users and IDWR).

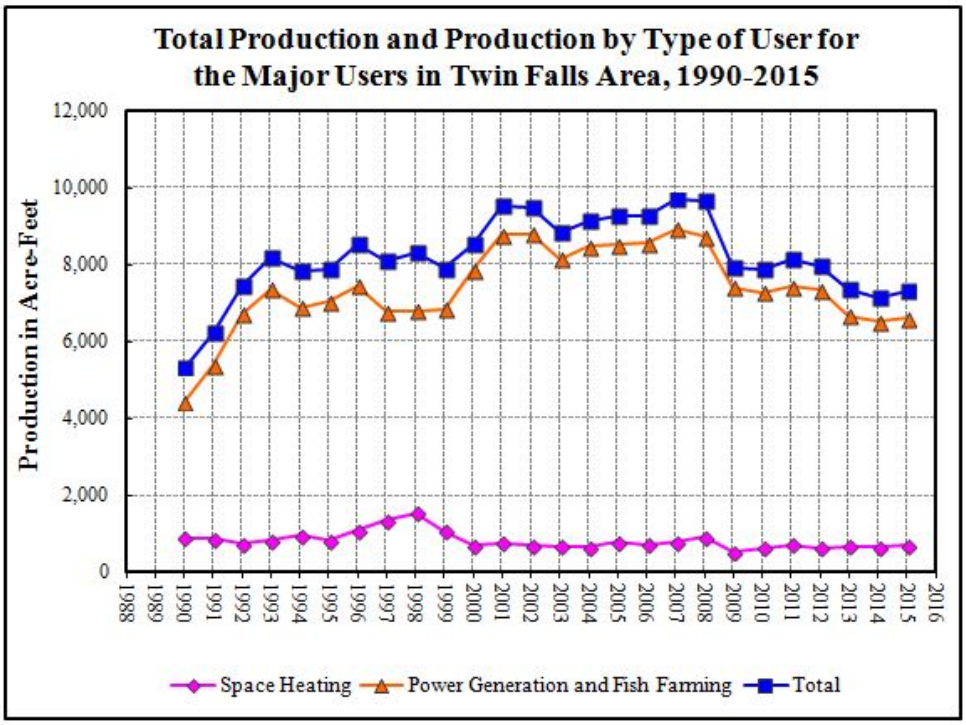

Figure 2. Total withdrawals for the Twin Falls geothermal system, and withdrawals by the two major types of uses.

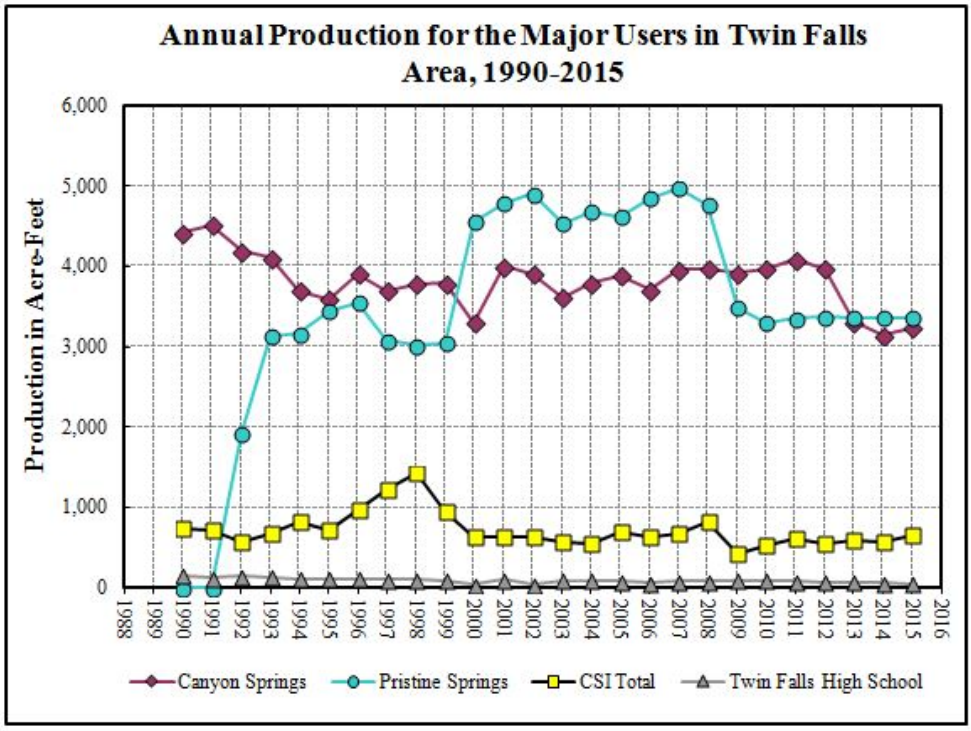

Figure 3. Annual withdrawals by individual geothermal producers in the Twin Falls system.

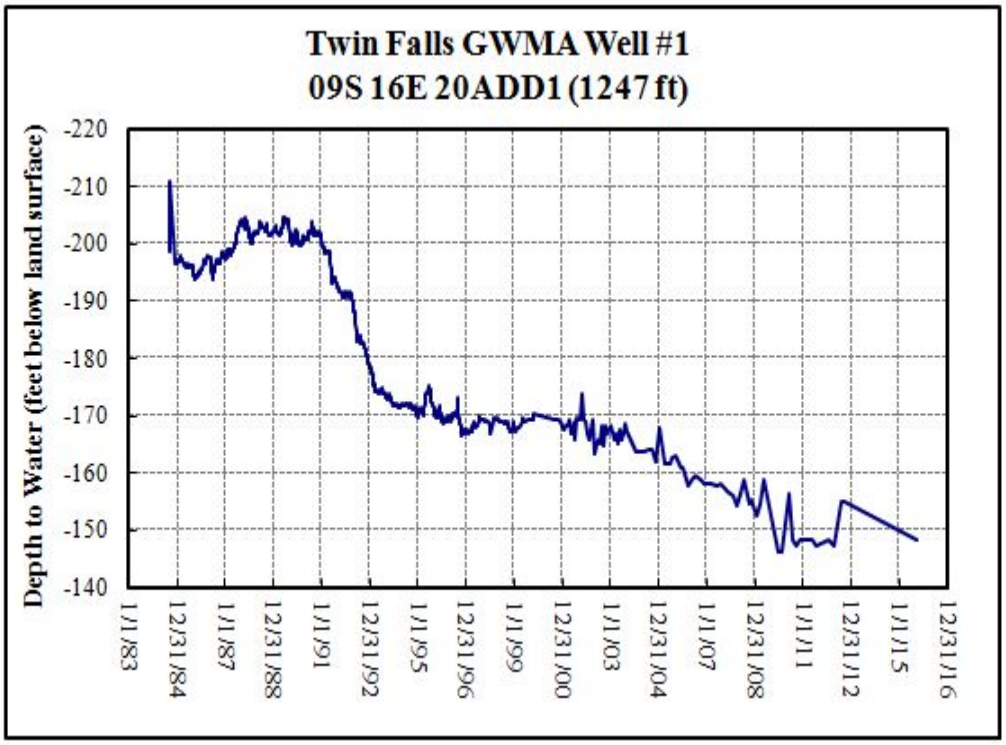

Figure 4. Hydrograph for the Filer Test well.

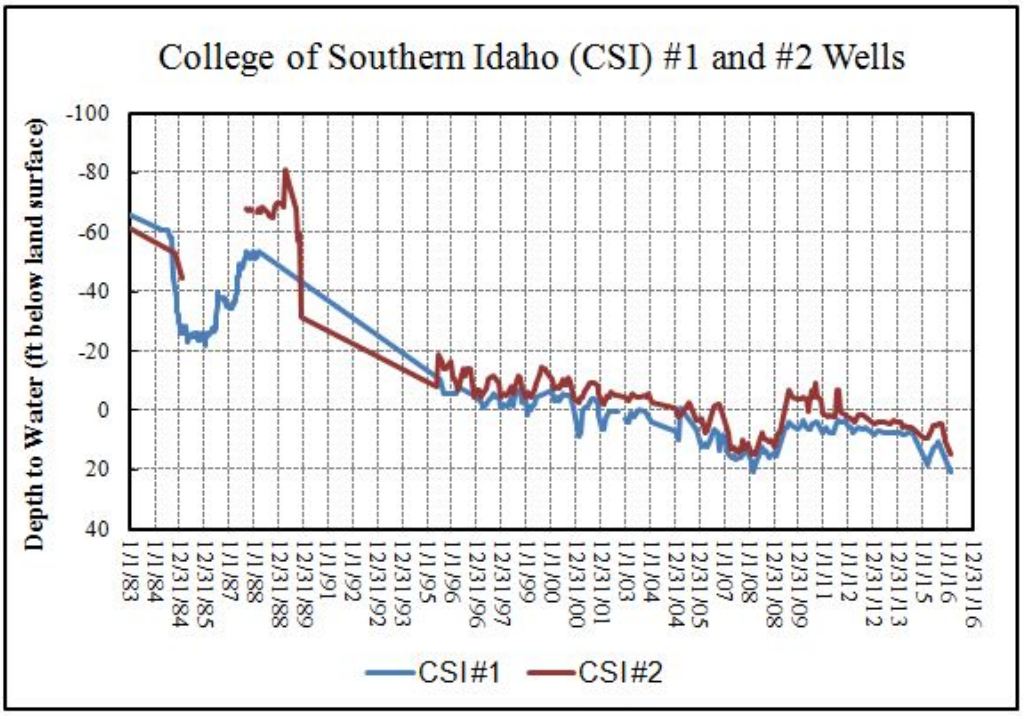

Figure 5. Hydrographs for the CSI #1 and CSI #2 wells.

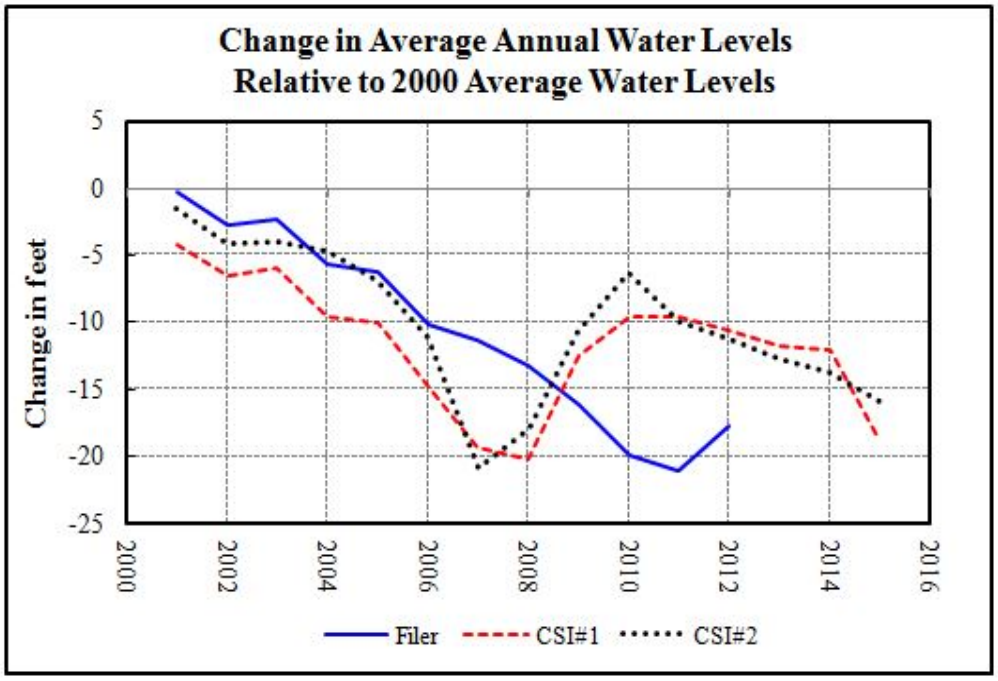

Figure 6. Changes in the average annual water levels in the Filer, CSI #1 and CSI #2 wells, relative to the average water levels in 2000.

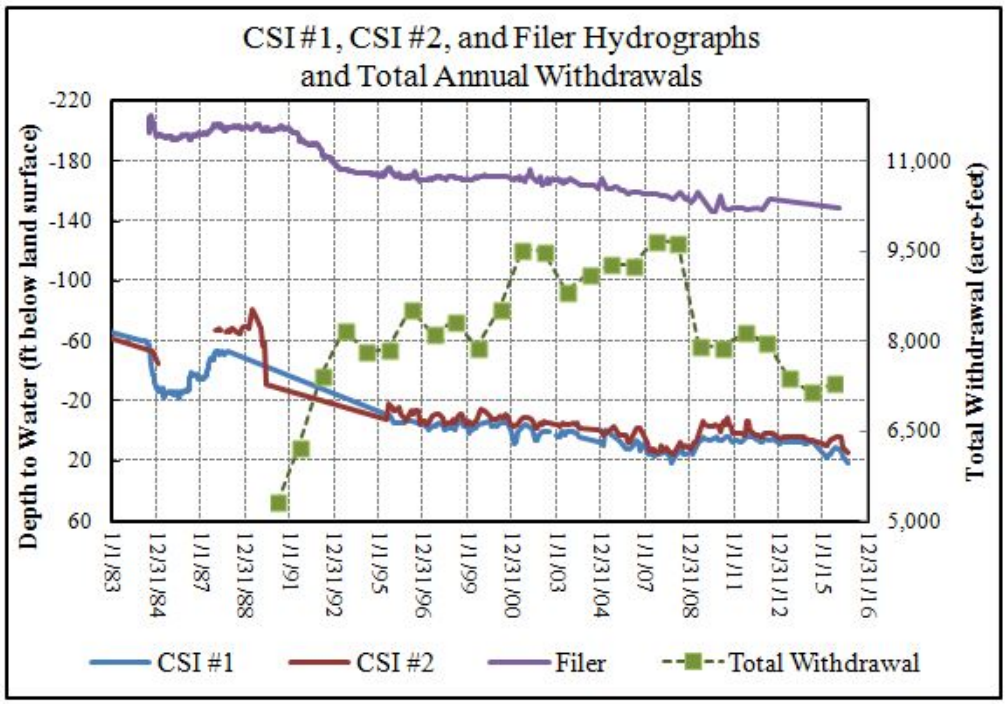

Figure 7. CSI and Filer Test hydrographs and Total Withdrawal for the Twin Falls geothermal system.