

MEMORANDUM

August 12, 2004

TO: Country Club Estates (Springs) Diversion File

FROM: Cindy Yenter

RE: System Analysis

Pursuant to a site visit on July 20, 2004, telephone conversations with Jim Spooner (Homeowners Association president), and research of water right records and water distribution files, I have made the following analysis of water uses in the area locally known as Country Club Estates. This community is located in T09S R18E Section 31, Jerome County, and is situated adjacent to the north bank of the Snake River near the Shoshone Falls Power Plant, and across the river from Shoshone Falls Park.

System Summaries

There are four separate spring sources used by Country Club Estates (CCE) or its members, including one spring shared with an Idaho Power Company (IPCO) diversion. The springs are identified as:

- Spring #1 (Main Spring), NESWNW Sec 31, located within Lot 2 Block 2, CCE Unit 2
- Spring #2 (Idaho Power Spring), NWSENE Sec 31, located within Lot 3 Block 3, CCE Unit 2
- Spring #3 (Switchback Spring), NESENE Sec 31, located within Lot 1 Block 4, CCE Unit 2
- Spring #4 (Freeman Spring), NWSWNE Sec 31, located outside the platted area

There are four diversion systems utilizing the various springs. They are:

1. Golf course irrigation system. A 2-HP surface pump (at Spring #1) and two gravity diversion lines (Spring #2 and Spring #3) previously supplied flows to an automated irrigation system sprinkling approximately 11 acres. This system also provides water to public restrooms and drinking fountains. I verified this system, took flow measurements and calculated a power consumption coefficient at the Spring #1 pump. Since my visit, flows from Spring #2 have been routed to the sump at Spring #1 and are now being pressurized directly at the pump. Meanwhile, the line at Spring #3 has been damaged due to road construction and is not in use.
2. Idaho Power diversion line from Spring #2 for use at the Shoshone Falls power plant. The specifics of this system are unknown to me at this time.
3. Springbox and 3-inch line diverting flows from Spring #4 for culinary and/or irrigation water to 14 upper homesites within the original or first phase of Country Club Estates (the Freeman pipeline). The headworks and pipeline have been vandalized and are not in operation. Homeowners have drilled deep wells to replace the domestic water supply, but they wish to repair and resume the use of this system for irrigation. I did not verify this system, although the old pipeline is still present and is visible in spots across the canyon wall.

4. Buried diversion line from Springs #1 and #2 to a sump near the south end of the golf course, pumped for irrigation to various lots within the lower, or western, homesites (Baldwin/Ainsworth diversion). I was not aware of this diversion until after my site visit, and I need to investigate it.

Water Right Analysis (see corresponding system descriptions, above)

1. Water right nos. **36-7269A** and **36-8127A** authorize irrigation use on the golf course. These two rights, when combined, authorize a diversion rate of 0.15 cfs, or about 67 gallons per minute, and a total annual diversion volume of 43.6 acre-feet on 10.9 acres. 36-7269A shows Spring #3 as its source, and 36-8127A shows Spring #2. Neither right identifies Spring #1, which is a primary source at this time. There is also no component on either right for domestic or commercial use for restrooms. Right no. 36-7269B was licensed from Spring #3 for domestic and recreation (swimming pool) use at the old clubhouse, but it was not claimed in the Snake River Basin Adjudication. This right would likely be sufficient and appropriate to authorize the diversion and use of water for public restrooms, if it were claimed and decreed.

2. Water right no. **36-2037** authorizes the IPCO diversion from Spring #2. Uses authorized under this right are domestic, commercial, cooling and 2 acres irrigation. The maximum authorized diversion rate is 0.3 cfs (135 gpm) and the date of priority is 1921, which is senior to all CCE rights.

3. Right no. **36-7270** was developed by Karl Freeman, from Spring #4. This right authorizes .07 cfs (31 gpm) and a total annual diversion volume of 8.8 acre-feet for domestic use and a total of one acre irrigation within 14 homesites in Block 1, Country Club Estates.

4. Water right no. **36-8127B** allows diversion rates of up to 0.29 cfs (130 gpm) and a total annual diversion volume of 34.8 acre-feet for domestic, 4 acres irrigation and stock water uses within 26 homesites in Blocks 1, 2 and 4, Country Club Estates (for a total of 39 homesites; Lot 21 Block 1 is shown on both 8127B and 7270). This right is appropriately decreed with Springs #1 and #2 as its sources.

Discussion and Recommended Actions

1. 36-7369A and 36-8127A are combined to authorize golf course irrigation, but the spring sources are not identified correctly. An application for transfer would be recommended to modify these rights to correctly identify the spring sources being used. The water user has also inquired if the points of diversion for these rights could be consolidated and changed to a single point directly from the pond. This is entirely possible, as all springs are tributary to the natural impoundment, and probably prudent. The system efficiency might be greatly increased if the pumping station were moved to the center of the distribution system. Care would have to be exercised so the new pumping rate does not exceed the decreed diversion rate of 0.15 cfs.

The golf course irrigation system, as originally configured, was literally working against itself to restrict flows into the system. This in turn was preventing adequate distribution of flows on the golf course. Measurements I took indicated that there was about 40 gpm available at that time from Spring #2 under free-flow conditions, but only 5-10 gpm was entering the irrigation mainline under gravity pressure. The gravity head from Spring #2 is not sufficient to overcome the backpressure on the irrigation line once it is pressurized by the pump. At Spring #3, I also suspected that incoming flows were restricted because of backpressure from the pump, even though the pump is situated on the other end of the system. The Spring #3 contribution was also only about 10 gpm with the irrigation pump on; I was not able to measure free-flows.

During my visit I discussed with Jim Spooner and with Leo (system operator) the possibility of routing gravity flows from Spring #2 directly into the sump at Spring #1, and pressurizing them at that point. Combining flows into a common sump should allow the existing pump to operate at maximum efficiency, and would optimize the use of flows from Spring #2. A two-horsepower pump should be capable of delivering up to 70 gpm at 30 psi, assuming a total maximum lift of 10 feet, and this quantity is coincidentally equivalent to the combined water right limit of 67 gpm. At the time of my visit, the pump was only diverting 37 gpm due to limited flows. Since the Spring #2 flows have been re-routed, Mr. Spooner reports that Leo is able to run two full sets at once from the pump alone (the Spring #3 line is damaged and not contributing). Leo's irrigation sets appeared to run at 35-40 gpm each, therefore the new pumping rate is probably 75-80 gpm.

The re-routing of the CCE Spring #2 pipeline should not have impacted or injured the senior IPCO diversion from Spring #2 in any way, since all changes were done at the discharge end of the line. A future transfer to change the CCE pods to the pond would also not have adverse impacts and could actually enhance the IPCO diversions by removing the CCE line from the springbox entirely.

2. 36-7269B appears to still be in use for the golf course public restrooms. Without this right decreed, however, this diversion is not authorized. CCE should file a claim to this right with the SRBA court so that it may be decreed. With the golf course irrigation system modified, the Spring #3 line could be repaired for use in the restrooms only. I would recommend the isolation of the restroom and drinking fountain water lines from the irrigation lines to ensure a potable water supply to this public use area.

3. At this time, right nos. 36-7269A, 36-8127A and 36-8127B are in the name of Country Club Estates, with Karl Freeman listed as the contact address. Mr. Freeman no longer lives in the subdivision; a change in address should be filed to show the present contact name and mailing address. Right no. 36-7270 is still recorded in the name of Karl Freeman. A change in ownership notice is required, if pertinent, to change the ownership of this right to Country Club Estates.

4. The PCC at the golf course pump will need to be re-measured due to the design modifications. This diversion must resume measuring and reporting this year. The Baldwin/Ainsworth diversion from Springs #1 and #2 is also required to measure and report due to total water right rate of diversion. This system must be measured this season and a determination of measurement method made. The Freeman pipeline system, once repaired, is exempt from measurement as the water rights fall below minimum criteria. The IPCO system is also subject to measurement and reporting requirements.