

WOOLLS RANCH WATER INSUFFICIENCY AND TOXIC WATER QUALITY

Woolls Ranch has insufficient water to irrigate its existing vines due to poor water quality. The Ranch also has insufficient water to irrigate its vines due to well interference with water availability to neighbor parcels. A close reading of the Luhdorff and Scalmanini Water Availability Report dated August 6 2014 indicates that Woolls Ranch has no more than 9-10 acre feet of usable water at best, and 5 acre feet at worst.

WATER QUALITY

Arsenic & Boron

According to the report, Woolls Ranch has toxic water quality in the Pond Well, which is listed in the example tables on page 41 as potential supply for more than 50% of the water for the parcel. As shown on page 31, Pond Well water is toxic to humans. The Ludhorff and Scalmanini Draft Report dated February 11, 2014 states on page 3, “The poor ground water quality includes concentrations of metals such as arsenic, iron and manganese that exceed drinking water standards throughout the County”. **The arsenic content is .49mg/L - 5 times the limit set by EPA for drinking water.**

The Pond water is also toxic to grapes, containing a boron content that is 3-4 times the amount recommended for vine irrigation. Page 34 of the 8/6/14 report states “...boron concentrations greater than 0.5 to 0.75mg/L can be of concern to sensitive crops”, i.e., grape vines.

Because the proposed Winery meets the definition of a public water system due to the projection of more than 25 visitors and staff per day for more than 60 days per year (CA Safe Drinking Water Act, Section 116275) arsenic regulations must be followed. The U.S. EPA has created a publication that outlines the requirements of public water systems, “Complying With the Revised Drinking Water Standard for Arsenic: Small Entity Compliance Guide”. A copy of this guide is attached. Procedures for public notification must be followed, and methods for testing, monitoring, reporting and removing arsenic must be instituted. These are outlined in the attached guide. Disposal of the arsenic laden wastes must comply with EPA regulations.

The Luhdorff & Scalmanini report indicates on page 4 that the Woolls Ranch arsenic problem is to be solved by diluting the Pond Well toxic water with potable water from the Woolls/Walker Well and the Winery Well, thereby not removing the contaminants, but reducing them to levels below current standards: “This is an important component of the Woolls Ranch water use strategy as it allows groundwater with naturally varying water quality to be mixed before distribution to the vineyard”. However, the Pond Well water is so toxic only a fraction of its water can be used in this manner.

The *example* tables on pages 41 and 42 list the “*supply*” of these combined potable wells at 8.04 to 8.66 AF total. Assuming for a moment that these examples have merit, blending this water with Pond Well water to reduce arsenic concentration by the required 80% means that just 20%, a total of 1.6 AF, of Pond Well water can be used. Therefore, the total available water would be, in this example, 9.6 to 10.2AF, not 16-17 AF as used in the examples.

If a filtration method is used to reduce the arsenic, then diluting the boron in the Pond water by the necessary 60-70% means 2.4 AF of Pond Well water may be used, making the total water for vines in this example 10.5 to 11AF.

Filtering arsenic results in hazardous waste that must be handled by appropriately trained personnel. Depending on how the arsenic contamination is handled, there is potential contamination of surrounding wells, springs and creeks by filter discharge, spills, runoff and through percolation from irrigation. Filtering boron involves a reverse osmosis process that wastes a considerable amount of water, thereby exacerbating the problem of water quantity.

Contamination of Neighboring Wells, Streams and Aquifers

Aside from the potential contamination of surrounding wells, springs and creeks by filter discharge, spills, run off and through percolation from irrigation, there is the likelihood of further mobilization and creation of contaminants by oxidation of arsenic by the action of pumping the Woolls Pond Well.

According to a study done by the US Geological Survey entitled “Effects of human-induced alteration of groundwater flow on concentrations of naturally occurring trace elements at water-supply wells” dated September 4th 2010 (copy attached), “Unintended increases in solute concentrations and degradation of shallow water quality often result as water is drawn quickly to depth by steep hydraulic gradients associated with pumping.” Further, “Human perturbation induces alternate groundwater flow paths at various scales. These alternate or short-circuit pathways may arise from ...flow along fully penetrating well screens that connect otherwise separate aquifer systems, aquifers, aquifer units or zones within an aquifer;...” As illustrated by the drawdown rates detailed on page 20 of the L&S report, Woolls Ranch Pond Well penetrates across aquifers or aquifer zones. The mechanical action of pumping causes contaminants to be released from aquifer materials. In addition, oxidation caused by pumping and mixing of waters of different depths can convert less toxic compounds to more toxic compounds, for instance, organic arsenic to the highly toxic inorganic arsenic.

As shown on the diagram B on page 751, representation of an actual case study of a Modesto, CA well, the use of contaminated water for irrigation can contaminate surrounding soil, groundwater, springs and streams through percolation, runoff and infiltration. This puts the Woolls/Walker Well, the Winery Well, the Allen/Campbell Well, and the Simpson Spring at risk, in addition to the natural streams on the property, Redwood Creek and other nearby existing and future wells, springs and streams not a subject of this WA analysis.

WATER QUANTITY

Pumping interference with neighbor water sources

Woolls Ranch has insufficient water to irrigate its existing vines because pumping the 2 wells that produce potable water, the Woolls/Walker Well and the Winery Well, interferes with water availability to neighbor parcels. Indeed, the neighboring Allen/Campbell well was pumped dry by Woolls/Walker Well pumping. And the spring for the Simpson property dried up from pumping the Winery Well.

The table on page 25 of the L&S report demonstrates that a pumping rate of 10gpm of the Woolls/Walker well reduces the water level in the neighboring Allen/Campbell Well. Inexplicably, the examples of total water production in the tables on pages 41 & 42, use pumping rates of 20gpm & 10gpm, even during the dry season, and for up to 28 days straight. Without the 5 years of monitoring recommended in their report, they know it is impossible to estimate what these 2 wells will produce and why mitigation of this impact equals reduced pumping of this well. This is clearly why Luhdorff and Scalmanini have labeled these tables “Example of Water Supply” EXAMPLES, not ESTIMATES. These examples are of little value for determining the actual available *usable* water.

On Page 49, the report reads that if spring water for the Simpson property is adversely impacted by pumping the Winery Well, mitigation will involve replacement of water **with water from wells on the applicant’s property**. This means that an unknown portion of the water in the Winery Well, or even the Woolls/Walker Well, may be required to supply the Simpson property, further reducing production for the vineyard.

If these 3 wells were capable of producing the 16-17AF listed in the examples on pages 41 & 42, why did Woolls Ranch, as shown on page 39, ***pump only 5.3 AF from all three wells in 2013*** and purchase 5.52 AF (1.8 million gallons) of Napa City water? The real reasons are clearly two: 1) to dilute the toxins in the Pond Well water and, 2) to supplement the insufficient quantity of water.

Groundwater Recharge

The groundwater recharge projection contained in the L&S report is, as admitted on page 49 of the report, conjecture, “...due to the lack of available data regarding historical water levels in the area”. The engineers recommend a 5 year period of monitoring to “...identify trends associated with seasonal weather patters and precipitation totals, water year types and groundwater use by the applicant.” This recommendation, and the methods by which this data is to be gathered, are curiously listed as a ***mitigation***, which is a completely inaccurate characterization. Only when the data are obtained after 5 years of monitoring, can mitigation measures be fully developed and implemented. Data collection is not mitigation.

CONCLUSIONS

Woolls Ranch has insufficient water to irrigate its existing vines due to demonstrated water quality and proposed method of treatment.

Woolls Ranch has insufficient water to irrigate its existing vines due to insufficient water quantity demonstrated by 1) interference with neighbor water sources while pumping only 30% of stated water needs and 2) the purchase of 1.8 million gallons of city water.

Woolls Ranch groundwater recharge is unknown, therefore sustainable groundwater pumping levels cannot be determined until sufficient data has been accumulated over a period of five years. The data collected over the five years must include monitoring of neighbor wells, springs and streams for contaminants.

Woolls Ranch Winery Use Permit must not be approved for a period of 5 years.

After a period of five years, in addition to addressing water quantity issues outlined above, any Woolls Ranch Winery Use Permit Application must include detailed information on compliance with California and Federal laws regarding public water systems.

The current Woolls Ranch Winery Use Permit must be denied.