

June 5, 2007

Michelle Mata
Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, Ca., 92123

RE: Comments to Tentative Order No. R9-2007-0046, Waste Discharge Requirements, Oaktree Ranch Inc.

Dear Michelle:

Our primary comment is to Item #4, of the RWQCB letter dated March 30, 2007. This item is in regard to the new requirements set for Nitrogen limitation in the wastewater treatment plant effluent, and, its ultimate effect on the ground water.

Your recommended effluent requirements for nitrogen are 2.6 mg/l as N as a 12 month average with a daily maximum of 6.52 mg/l as N. On page 12 of our submitted report of waste discharge we illustrated a calculated effluent concentration in near the same concentration, 2.14 mg/l as N. However, recognizing that this is a calculated number and is calculated as an optimum number, it would be difficult to assure the attainment of this extremely high efficiency on a day in and day out basis. For this reason, our Report of Waste Discharge recommended an effluent concentration of <10 mg/l NO₃-N.

We are very conscious of the Basin Plan requirements for Nitrogen. The Basin Plan for this discharge area is 10mg/l as NO₃ and not as N. However, the current concentration of NO₃ in the ground water is 20 mg/l as accepted testing data on the ground water monitoring well at the facility. Utilizing your recommended effluent requirement number of 2.6 mg/l as N, this calculates to be approximately 11.5 mg/l as NO₃. (Utilizing the standard multiplier of 4.44 to convert NO₃-N to NO₃).

While the 11.5 mg/l NO₃ concentration in the effluent is higher than your Basin Plan requirement, it does not mean that this concentration will elevate the ground water. Therefore, we would request that the annual average effluent concentration be set at 10.0 mg/l as N. This level also will not further degrade the ground water.

We are utilizing a "nitrogen concentration prediction equation" to illustrate that this discharge at 10.0 mg/l NO₃-N will not further degrade the ground water. This equation is the *Hantzsche-Finnemore Mass Balance Equation*. This equation is accepted by the

Central Valley Regional Water Quality Control Board and is used fairly extensively in the Butte County area. The equation takes the following form:

$$N_r = \frac{I * n_w * (1 - d) + R * n_b}{(I + R)}$$

where; N_r = final NO₃-N concentration in groundwater after mixing, mg/l

I = Volume of wastewater entering the soil averaged over the gross
Property area, in/yr.

n_w = Total -N concentration of wastewater, mg/l

d = fraction of NO₃-N lost in de-nitrification

R = average recharge rate of rainfall, in/yr.

n_b = background NO₃-N concentration without wastewater discharge, mg/l

Assigned values utilized for the above are:

I = 40,000 gpd over 92 acres of property

n_w = 10.0 mg/l

D = 0.5 mg/l

R = 20 inches/year

n_b = 4.5 mg/l No₃-N, or 19.98 as No₃

Therefore: The calculated prediction of nitrogen in the ground water (when effluent is 10mg/l or less) equates to, N_r = 4.18mg/l as No₃-N or 18.55mg/l as No₃. This concentration level is less than existing conditions in the ground water.

Should you have any questions, please do not hesitate to contact me.

Very Truly Yours,



Michael D. Hedenland

Cc: Bert Caster

David Thornburgh