



December 16, 2008

Mr. Gerard Thibeault
Executive Officer
Regional Water Quality Control Board
3737 Main Street, Suite 500
Riverside, CA 92501-3339

Subject: Additional Water Quality Modeling Analysis for the Beaumont Management Zone

Dear Mr. Thibeault:

Wildermuth Environmental (WEI) received and reviewed your letter, dated June 9, 2008, requesting additional information on the modeling analysis of the impacts of on-site waste disposal systems (septic systems) in the Beaumont Management Zone. Your letter requested that WEI run an additional modeling scenario to reflect the updated policy on the installation of septic systems in Cherry Valley under Riverside County Ordinance 871. Specifically, Ordinance 871 prohibits the installation of new septic systems unless the systems are designed to remove at least fifty percent (50%) of the nitrogen in the wastewater discharge.

The original modeling results included in our March 2007 Final Report of *Water Quality Impacts from On-Site Waste Disposal Systems in the Cherry Valley Community of Interest* show the projected extent of the nitrate-nitrogen plume in the Beaumont Groundwater Basin assuming the following:

- In 2005, there are 1,900 parcels in Cherry Valley on conventional septic systems
- Cherry Valley builds out to 7,800 parcels by 2030
- All new developed parcels (5,900) are on conventional septic systems
- Conventional septic systems discharge wastewater with a nitrogen concentration of 45 mg/L
- There is no supplemental recharge by the Beaumont Cherry Valley Water District in the Beaumont Management Zone

To respond to your request and provide decision grate information, WEI completed two additional model runs: one that meets the minimum requirements of Ordinance 871; and a more stringent scenario that requires the septic system discharge to comply with drinking water quality standards for nitrate-nitrogen. The number of parcels at build out and the recharge conditions applied in the original modeling runs are also applied in the updated scenarios. The additional specifics of each modeling scenario are as follows:

Scenario 1: All new developed parcels (5,900) are on advanced septic systems with a nitrogen discharge concentration of 22.5 mg/L (50% removal efficiency). All existing parcels (1,900) remain on conventional septic systems with a nitrogen discharge concentration of 45 mg/L.

Scenario 2: All new developed parcels (5,900) are on advanced septic systems with a nitrogen discharge concentration of 10 mg/L. Additionally, all conventional septic systems (1,900) are replaced by an advanced system (with a nitrogen discharge concentration of 10 mg/L) by 2018.

Included with this letter is a PowerPoint show of the modeling results for Scenarios 1 and 2 described above, as well as the original model results from 2006.

The results of Scenario 1 suggest that Ordinance 871 alone will not adequately protect the water quality of the Beaumont Basin. If all new septic systems only reduce the nitrogen concentration of the wastewater effluent to 22.5 mg/L, the Basin will still be significantly impacted. While the gradation and concentration of the nitrate-nitrogen plume is less than in the baseline scenario, the spatial extent of the plume that is in excess of the drinking water standard of 10 mg/L remains the same. Hence, in this scenario well-head treatment will still be needed in order to serve drinking water from local production wells.

Scenario 2 presents a more optimistic result for the Beaumont Basin. When nitrogen effluent concentrations are limited to 10 mg/L, combined with the requirement to replace all conventional septic systems over the next 10 years, the water quality of the Basin begins to improve, rather than degrade, beyond 2020. The initial degradation projected from 2010 to 2020 is due to the travel time through the vadose zone that exists in the Cherry Valley area. The results of Scenario 2 suggest that a more stringent policy on nitrogen reduction by septic systems can reverse the existing degradation that is occurring in the region. WEI is uncertain as to the availability of the septic system technology to achieve effluent concentrations at or below 10 mg/L, as this research is out of the scope and budget of this investigation.

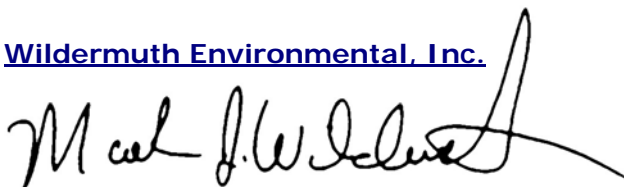
Based on the results of this analysis, it is our professional opinion that Ordinance 871 is not protective of the beneficial uses of the Beaumont Management Zone. We recommend that the Regional Board work with the Riverside County Department of Environmental Health to propose additional measures to prevent the increase of nitrate-nitrogen concentrations in the Beaumont Management Zone.

Representatives from WEI will be in attendance at the December 18, 2008 meeting of the Riverside County Groundwater Quality Evaluation Committee for the Beaumont/Cherry Valley Area to present the results of the modeling scenarios discussed herein.

Please call us if you have any questions or concerns.

Very truly yours,

Wildermuth Environmental, Inc.



Mark J. Wildermuth
Chairman



Wenbin Wang
Associate Engineer



Samantha S. Stevens
Senior Scientist

CC: Cindy Li, Chuck Butcher, Andy Schlange
Enclosure: PowerPoint Show of Modeling Results