

June 15



Groundwater Quality Evaluation
Committee for the
Beaumont/Cherry Valley Area.



**Final Report
And
Recommendations**

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Executive Summary

The Ground Water Quality Evaluation Committee (Blue Ribbon Committee) was formed by the County of Riverside on April 29, 2008 to review the Wildermuth Environmental Report and all pertinent data. Water quality data included within the Wildermuth Environmental Inc. (WEI) report indicates that Beaumont Cherry Valley Water District's well #16 and #21 have had sporadic spikes of nitrate concentration levels reaching the Maximum Contaminant Level (MCL). Cherry Valley Water Company and Bonita Vista Mutual Water Company have encountered the same problems. Data provided to the Committee from the California Department of Public Health (CDPH) indicates that these levels were only a spike and NOT indicative of the regional aquifer. Also the WEI report states that the presence of on-site wastewater disposal systems (OSWDS) could be a "possible source". As you read on, the build out of potential OSWDS are inflated and also indicates that OSWDS "are the source of nitrate contamination in the Beaumont Management Zone" contradicting previous pages. And again on page 1.1, the report indicates the OSWDS as being a "possible source." The report tends to discredit the effectiveness of septic systems leading the reader to assume the worst. United States Environmental Protection Agency (EPA) Fact sheet #932-F99-075 contradicts this discredit and clearly explains the functionality and operations of septic tanks including the parameters for failure. Maintained septic systems have an operational life exceeding 30+ years. Also, nitrogen removal was grossly understated and future nitrogen loading was over estimated.

Section 4 within the WEI report references future build out and potential nitrogen loading factors. Unfortunately, these factors are overstated due to inaccurate information with regard to potential build out projections. Furthermore, the Cherry Oaks and Hidden Meadows Tracts should have been included in these equations thus adding to the uncertainty of these projections. Figures 4-1, 4-2, 4-3 are a simulation in time to project the total impact of nitrogens. However with the data provided in this report to reflect future build-out/impacts, this data was part of the model calibration which should be deemed inaccurate. The report gives conclusions and recommendations on page 6-1 a total of 11:

1. According to CDPH water quality records, this is NOT accurate.
2. Again, this is NOT accurate, but over stated.
3. True.
4. This is true according to the report, however not noticed in Well 16.
5. High nitrate levels are sporadic at best, and there are NO high levels of specific ions according to CDPH.
6. Accurate under report conditions only.
7. Accurate under report conditions only.

8. Accurate under report conditions only.
9. This has NOT been proven in the Cherry Valley Community of Interest (CVCOI).
10. This should be left undetermined at this time.
11. This should be left undetermined at this time.

Despite efforts by local agencies involved in this report and /or those agencies that have deemed this report credible, it is apparent that the OSWDS within the CVCOI should be considered an effective treatment system until otherwise proven by future reports. It is also apparent that within the CVCOI there may be some locations that should be considered a "Point Source" based on their land use which would distinguish predictable concentrations and volumes. As noted, there have been geographical areas that should have been included in this report that were not.

At the County level, their efforts were deemed appropriate under the circumstances and information provided to them. Pursuant to the County of Riverside review and actions; the Board of Supervisors acted on April 29, 2008 to form this Committee evaluate groundwater quality in the CVCOI and make specific recommendations to County Board of Supervisors. However, after lengthy review of all reports, supporting documentation, the Committee would recommend that the County Board of Supervisors immediately repeal Ordinance 871 which prohibited conventional OSWDS until further investigations can be completed by an independent resource NOT associated with local agencies or influences. The potential effects of installing sanitary sewers within the CVCOI has not been determined that it will eliminate the degradation of local ground waters.

Measure "B" which was defeated by majority vote could have had a devastating effect on the CVCOI. The proposed cost to complete all infrastructures was estimated to be at \$60 million amongst 2000 residents. This equates to \$30,000 per resident and based on the final report by Wildermuth Environmental Inc. The tragedy to this would be if Measure "B" had passed, infrastructure built and the problem NOT solved.

Introduction

Within the Beaumont Management Zone (BMZ) and surrounding areas, increasing nitrate levels were noticed in some production wells giving concern to local water agencies. Within this area, the main source of drinking water is groundwater extracted from the Beaumont Basin area. The San Timoteo Water Shed Management Authority (STWMA) was formed in 2001 by the following agencies: Beaumont/Cherry Valley Water District (BCVWD), the City of Beaumont, South Mesa Water Company and the Yucaipa Valley Water District (YVWD). BCVWD and City of Beaumont concerned with water quality issues formed Project Committee No.1 (PC1) to manage and improve water quality in the BMZ respectively. With ongoing concerns over potential nitrates issues; PC1 initiated an investigation to determine the source of nitrates within this area.

Consequently, Wildermuth Environmental, Inc. (WEI) was contracted to develop a report regarding water quality within the BMZ to help determine the source of nitrates and was finalized in March 2007. At the County level, Ordinance 864.1 was passed by the Board of Supervisors on October 16, 2006 in response to the Wildermuth "Draft Report" dated July 12, 2006 for a 90 day period. Subsequently on February 27, 2007 Ordinance 864.2 was passed leading to an extension of a 120 day moratorium. On June 19, 2007, Ordinance 871 was passed, prohibiting any additional OSWDS unless they can remove 50% nitrogen. The ordinance was then considered a "Prohibition" instead of a moratorium. All action was based on a draft and final report prepared by Wildermuth Environmental.

On September 25, 2007 the Beaumont Cherry Valley Water District held a Special Measure Election that could have empowered the District to activate its "Latent Powers". Through the Local Agency Formation Commission (LAFCO), the District would have filed an application under the Municipal Water District Act. During local town hall meetings organized by the District prior to the election, it was estimated that capital costs to sewer the Cherry Valley area was ranging between \$50 to 60 million dollars. It was to be divided amongst 2000 residents with no additional funding secured. On September 26, 2007, Measure "B" failed to get the required votes for passage.

The Riverside County Board of Supervisors established the Groundwater Quality Evaluation Committee for the Beaumont/Cherry Valley Area on April 29, 2008. The Committee consists of interested local residents and technical experts in the field of water quality. The Committee membership is as follows:

Local Residents

Name	Area Represented	Number Attended
Joe Aceto	Beaumont	10
Bruce Cash ¹	San Timoteo Canyon	10
Brian DeForge	Beaumont	8
Sarah Eberhardt	Beaumont/Cherry Valley	1
Nancy Hall	Beaumont	10
Luwanna Ryan ²	Cherry Valley	11
Carl Workman	Banning	6

¹Appointed by the Committee as Chairperson

²Appointed by the Committee as Vice – Chairperson

One member, Sarah Eberhardt, only attended the first meeting. She did not participate in any of the discussions or vote on the approval of the Committee's final recommendations.

Technical Experts

Name	Job Title	Agency Represented	Number Attended
John Covington*	Water Resources Manager	Morongo Band of Mission Indians	11
Cindy Li, PhD, R.G.	Engineering Geologist	Regional Water Quality Control Board – Santa Ana Region	8
Hal Marlow, PhD	Assistant Professor	Loma Linda University School of Public Health	0
Behrooz Mortazavi, PhD, P.E.	Assistant General Manager Resource Development	Eastern Municipal Water District	6
Mark Norton, P.E.	Water Resources & Planning Manager	Santa Ana Watershed Project Authority (SAWPA)	7
John Watkins, M.P.H., R.E.H.S.	Deputy Director	Riverside County Department of Environmental Health	11
Joe Zoba	General Manager	Yucaipa Valley Water District	1

*Also a local resident of Cherry Valley

The technical experts are non-voting members of the Committee but provided significant technical assistance to the process of evaluating the many sources of information

The Committee was directed to review technical data presented by Federal, State and regional experts and make recommendations to the Riverside County Board of Supervisors, Cities of Beaumont and Banning and the Board of Beaumont Cherry Valley Water District regarding the on-going concerns of groundwater quality in the Beaumont Management Zone.

Scope of Investigation

Land Use: The area of investigation within the WEI report identifies the Cherry Valley Community of Interest (CVCOI). Directly up gradient of the Bonita Vista Mutual Water Company (BVMWC) and the Cherry Valley Water Company's (CVWC) wells are two large scale residential tracks of homes. The Cherry Oaks Tract includes 100 lots and the Hidden Meadows Tract includes 600 lots, unfortunately this should have been made a portion of this study as the impacts could be considerable. WEI indicates that the CVCOI has 1,900 developed lots, and under the assumption that future 1 acre lots would be reduced in size to .25 acre thus increasing the total number of OSWDS potentially to 8800. Currently, lots sizes are predominately 1 acre in size thus over inflating the potential OSWDS projections and future nitrogen loadings.

Scientific Literature: The WEI report consisted of many excerpts from previous studies that were related to OSWDS and the functionality and life expectancies. However, likewise there were many challenges to those references.

Nitrogen concentrations below OSWDS: The WEI report indicated that 9 sample locations were chosen for field examination and sampling. Samples were only recovered at 5 of 9 locations. Generally leach lines are located a few feet below ground surface and are usually surrounded by gravel. Every sample obtained was dry and did not have a distinguishing odor. It was also stated in the WEI report that *"the average nitrate concentrations in the samples from the CVCOI are much lower than seen in other studies"*. *The moisture content of the samples and the analytical results of the samples suggest that a representative sample was NOT obtained. The nitrogen concentrations of the samples collected suggest that the samples were more representative of soil NOT impacted by OSWDS.* Based on sampling results, it would seem prudent to incorporate additional sample locations for verification which was not completed.

Tracer Study: Within the CVCOI, nine wells were selected for sampling. Out of the nine, only 4 wells were active producers. Inactive wells can be used, however they must be adequately cleansed/flushed prior to sampling. Within the WEI report, it was apparent to the Committee that inadequate flushing of the inactive wells may have occurred. A low-flow pump was used and the sampler had no well data on any of the nine wells to help determine the construction and the well casing volume to assure that appropriate cleansing had occurred. Within the CVCOI, there are over 40 active wells which could have been utilized other than in-active sites. Pharmaceuticals and personal care products (PPCP) were detected in 6 of nine wells. However, one of the nine wells with the highest "nitrate spike" had NO PPCP's found in the samples. Also within the report, it is stated that *"The possible source of detected pharmaceuticals are OSWDS and animal waste"*.

As noted in Section 3.5, "elevated concentrations of specific ions, such as boron, potassium, and sodium relative to OSWDS have been used as indicators of OWDS effluent". However, all water quality data submitted from the California Department of Public Health to the Committee shows very low levels of the above mentioned ions or completely non-detected.

Estimation of current/future discharge projections: Information regarding future build out was inflated due to the WEI report's assumptions that current undeveloped lots which are mostly 1 acre would be developed into .5 acres in size thus doubling the estimated OSWDS and their discharge amounts. Current and future nitrogen loads have also been overstated. There are numerous references that indicate that an average household of four persons will contribute 8-10 lbs. annually. WEI reports 18 lbs annually. It is also stated that OSWDS only remove between 10-20% of nitrogen. EPA treatment guidelines indicate that 10-20% is removed before the Soil Absorption System (SAS) and another 10-40% removed in the leach field equating to 20-60% removal rate.

Planning level of basin-wide nitrogen impacts: The report is based on potential build out, again assuming that lot sizes will become .5 acres or less and the total OSWDS will increase accordingly. This is shown to equate to 185,000 to 500,000 pounds of nitrogen a year which would only be possible under these assumptions. There are numerous assumptions into the Year 2100, which the following would have to occur:

- Water quality would have to be at a point of degradation with an average nitrate concentration of 8 mg/l. (n)
- CVCOI would have to completely build out all potential lots.
- CVCOI would have to decrease all lot sizes to .5 acres.

Thresholds to compel sewerage: It is understood that the California Regional Water Quality Control Board (CRWQCB) has certain authority to compel sewerage in areas determined to be negatively effecting groundwaters and exceeding basin water quality objectives. It is further understood that under the previous AB 885, it would have required the CRWQCB to further establish Statewide regulations for OSWDS. Since the immediate withdrawal of AB 885, it is presumed that this bill will be re-introduced in the near future. However, the CRWQCB has established over 60 prohibitions of OSWDS within the State based on some type of report indicating the degradation of local groundwater.

Water Resource Quality

As indicated in Figure 1-1 of the WEI report the groundwater flows directly from a northerly to a southern direction or in other words, from the Cherry Oaks Tract to the Beaumont Management Zone thus impacting the BVMWC and CVWC respectfully. Well locations that were selected for the "Tracer Study" appeared to be only wells that at some time had shown elevated levels of nitrate. Wells in surrounding areas of the Beaumont Management Zone were NOT part of this study, nor were any water quality data sampled or recorded to establish a benchmark. None of the wells except Well 21

(BCVWD) have a sanitary seal. Wells selected were not reviewed for construction data, which would have included: casing diameter, overall depth, screen intervals, sanitary seal, date of construction, mineral composites, drilling method, and estimated yield. Lack of this information whether it becomes part of a final report or just utilized for field study reference, is critical before determining sampling locations. It has been confirmed that most of the wells selected in this report are less than the required 100' distance between a domestic water well and an OSWDS. Furthermore, specific flood control channels, active commercial septic systems, and residential activity could have been the determining factor for the sporadic spikes in nitrates rather than a widespread aquifer problem with OSWDS. When reviewing the sampling procedures, it has been determined that 60% of all wells sampled were in-active. Not having the well construction data, the sampler has no idea if he/she has exchanged the stagnant waters with a representative sample amount of the surrounding aquifer. The pump used in the in-active wells is listed as a GrundFos Redi-Flo2 pump. The report indicates that the pump was lowered to 100' below ground surface (BGS) and pumped at a minimum of 45 minutes. The total flow equates to 338 gallons @ 7.5 gallons per minute at 100' of total dynamic head (TDH).

This is NOT an adequate exchange of casing volume as well as lacking velocity to help cleanse the casing in a stagnate state. Section 3 of the WEI report references specific ions that would be attributed to the presence of OSWDS. In reviewing water quality data received from the California Department of Public Health with regards to wells referenced in the study, it appears that there is at best a minimal detection of such ions in BCVWD wells #4a, 5, 16, and 21. These results are from 1996 to 2008. The results are summarized as follows:

Well Number	Chloride Level	Sodium Level	Total Dissolved Solids	Potassium	Nitrate
4a	20 to 21 mg/l <i>MCL 250 mg/l</i>	20-21 mg/l <i>MCL 250 mg/l</i>	300-350 mg/l <i>MCL 500 mg/l</i>	1-2 mg/l <i>MCL - None</i>	8-11 mg/l <i>MCL 45 mg/l</i>
5	10 - 11 mg/l <i>MCL 250 mg/l</i>	15 - 19 mg/l <i>MCL 250 mg/l</i>	290-370 mg/l <i>MCL 500 mg/l</i>	1.2 - 2 mg/l <i>MCL - None</i>	11-16 mg/l <i>MCL 45 mg/l</i>
16	13 - 16 mg/l <i>MCL 250 mg/l</i>	35-38 mg/l <i>MCL 250 mg/l</i>	310-360 mg/l <i>MCL 500 mg/l</i>	1 - 2 mg/l <i>MCL - None</i>	6 - 43 mg/l <i>MCL 45 mg/l</i>
21	11 - 13 mg/l <i>MCL 250 mg/l</i>	24 - 25 mg/l <i>MCL 250 mg/l</i>	270-300 mg/l <i>MCL 500 mg/l</i>	1.5 - 2 mg/l <i>MCL - None</i>	9.5 - 43 mg/l <i>MCL 45 mg/l</i>

Under State law, every water purveyor is required to submit to its consumers a Consumer Confidence Report (CCR) each calendar year prior to July. This report in detail should explain the following: (i) water quality constituents that have been detected within the year of the report, including previous year's data (ii) explanation of the related terms used in the report, (iii) contaminants that may be

present in the source water, (iii) and any additional information deemed necessary by the agency. This committee has received and reviewed the CCR's for the calendar years of 2006-2009 and has found the following levels of detected nitrates:

	Range of Detections	Average Level Detected	
2006:	3.1-40 mg/l (NO3)	8.1 mg/l	MCL 45 mg/l
2007:	2.5-16 mg/l (NO3)	6.8 mg/l	MCL 45 mg/l
2008:	3.1-16 mg/l (NO3)	6.8 mg/l	MCL 45 mg/l

Committee Directives

The Riverside County Board of Supervisors directed the Committee to accomplish the following:

1. Conduct bi-monthly committee meetings.
2. Examine the overall water quality of the Beaumont/Cherry Valley region.
3. Review independent technical studies regarding the current and future status of the groundwater quality in the area.
4. Identify potential threats to the groundwater quality.
5. Identify possible mitigation measures and the cost effectiveness of each measure.
6. Present Committee's recommendations to the Board of Supervisors, Cities of Beaumont, Banning and Calimesa, the Board of Beaumont Cherry Valley Water District, 5th District Pass Area Municipal Advisory Committee, Regional Water Quality Control Board - Santa Ana Region, Riverside County Department of Environmental Health, San Geronio Pass Water Agency, San Timoteo Watershed Management Authority, Yucaipa Valley Water District, Morongo Band of Mission Indians and other interested entities.

Committee Activities

The Committee typically met once per month starting in July 2008 through June 2009. There were a total of 13 meetings which were all held in the Beaumont/Cherry Valley Area. The Committee heard from seven different speakers representing agencies with knowledge and expertise of groundwater quality in the Beaumont Basin. Two of the presenters discussed their own independent studies and the others reflected on those studies. The speakers included the following individuals:

Committee Presenters

Name	Agency Represented
Peter Martin, PhD	United States Geological Survey
Steve Williams, P.E.	State Department of Public Health – Drinking Water
Mark Wildermuth, M.S., P.E.	Wildermuth Environmental
Chuck Butcher	Beaumont Cherry Valley Water District
Jeff Davis, M.S., P.E.	San Geronio Pass Water Agency
Gerard Thibeault, P.E.	Regional Water Quality Control Board – Santa Ana
Andy Schlange	San Timoteo Watershed Mgmt. Authority and Watermaster

After each presentation the Committee and the audience were able to ask questions of the presenters for clarification and in some cases request additional information. The Committee met three additional times to review the presentations in their totality and evaluate their findings in reference to the charge of the Committee. These studies and presentations considered current conditions and sensible future growth for the area. (Charge #2, #3 & #4)

Committee Conclusions and Recommendations

The Committee makes the following findings and recommendations:

1. Findings: The Wildermuth report titled: *Water Quality Impacts from On-site Waste Disposal Systems in the Cherry Valley Community of Interest March 2007 Wildermuth Environmental Inc.* had parameters that were too narrowly focused; used well water sources located in close proximity to on-site wastewater disposal systems and used exaggerated build out approximations.

Recommendation:

- An independent third party study conducted by someone other than Wildermuth Environmental, who conducted the initial report, is needed to evaluate this perceived regional issue. The study should evaluate beyond those areas studied in the initial report, consider reasonable build-out projections and consider other possible sources of groundwater contamination such as septic systems in the Cherry Oaks Tract and beyond to the Hidden Meadows Tract area and the surrounding communities including the City of Beaumont. The cost of the new study would likely exceed \$150,000 (based on the cost of Wildermuth Report). The information would be invaluable and assist in making sensible land use planning decisions in the area. (Board of Supervisors Committee Charge #3, #4 & #5)
2. Findings: The conventional on-site wastewater disposal system prohibition instituted by Riverside County may have been premature. It was based on a narrowly focused report prepared by Wildermuth Environmental and

commissioned by the San Timoteo Watershed Management Authority Project Committee 1. It was acknowledged that on-site wastewater disposal systems can negatively impact the groundwater but not as quickly or severely as specified in the Wildermuth Report.

Recommendation:

- Repeal Riverside County Ordinance 871 which prohibits the installation of new conventional on-site wastewater disposal systems until further information on the impact of groundwater quality is determined. This is under the assumption that stringent parcel size restrictions are in place and are enforced. The cost of the non-conventional or advanced treatment systems is estimated to be between \$30,000 and 40,000 for each property owner and may not be necessary until more is known about the groundwater basin. (Board of Supervisors Committee Charge #4 & #5)
3. Findings: Additional development has occurred in the unincorporated area of Cherry Valley that violates parcel size restrictions of nothing less than ½ acre. The California Regional Water Quality Control Board – Santa Ana Region has adopted this same minimum parcel size restriction of 1 OSWDS per ½ acre. The smaller parcel size may be a contributor to eventual groundwater contamination.

Recommendation:

- Continue parcel size restrictions of nothing less than 1 acre to limit density for developments using on-site wastewater disposal systems and to be consistent with existing land use parameters. The cost of this recommendation would be borne by the developer and not existing residents. (Board of Supervisors Committee Charge #4 & #5)
4. Findings: Some active water wells, including ALL wells studied in the Wildermuth Report in the Cherry Valley area appear to be located within the 100' restrictive zone surrounding contamination sources.

Recommendations:

- Encourage water purveyors within the Beaumont Management Zone to retrofit water wells to have at least the minimum fifty foot sanitary seal.
- Initiate the directives found in the State of California Drinking Water Source Assessment and Protection Program (DWSAP). (Board of Supervisors Committee Charge #4 & #5)

5. Findings: Potential and future development of parcels within the unincorporated area of Cherry Valley, and the possible action of future assembly bills for on-site wastewater disposal systems could be deemed undesirable both financially and operationally with respect to current and future landowners.

Recommendations:

- The County of Riverside should consider and convene an oversight committee comprised of the County Department of Environmental Health, representatives of local water agencies within the immediate geographical area and residents of the unincorporated area of Cherry Valley. This committee's tasks shall be but not limited to:
 - Prepare and initiate a future proposed study.
 - Review potential actions of future assembly bills
 - Seek source funding for future projects within the unincorporated area of Cherry Valley. (Board of Supervisors Committee Charge #4 & #5)