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SEP 10 2001

KINGS COUNTY
PLANNING AGENCY

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September 10, 2001

Bill Zumwalt, Director
Kings County Planning Agency
Government Center Building #6
1400 W. Lacey Boulevard
Hanford, CA 93230

Dear Mr. Zumwalt:

I am writing to comment on the Revised Draft Dairy Element of the Kings County General Plan. The rules proposed for dairies in the future are a significant departure from the way dairies have been regulated in the past. I have many questions and concerns about this. I am concerned about whether all of these things are based on good science or political and social pressure. Many of the things that are proposed in this document are not even in place on university dairies such as at Cal Poly or UC Davis. If the academics haven't been able to implement these things, how are we supposed to make these things work in our spare time? To sum it up, are we putting the cart in front of the horse? It is stated on page 4.2-24 that USDA ARS acknowledges that a complete understanding of emission and dispersion of gases generated from animal production systems is currently lacking and that the research projects are expected to be completed by 2005. Page 4.2-27 states that an understanding of livestock operation-related air quality issues is limited and that current research is not specifically addressing all of the issues being faced in the southern San Joaquin Valley. Page DE-49 calls for feasible mitigation measures. I question whether many of these technologies are feasible yet. There are so few advanced treatment technologies for manure operating in the whole country and they haven't had a very good success rate. I also have questions about some issues in the element that seem to relate better to east coast areas than to our arid west coast environment. Specifically, I'm talking about phosphorus concerns, the proposal to divert clean water from roofs, manure storage buildings, and talk of land management practices such as filter strips. The dairy business is very important to our area. It provides good jobs and good economic activity. We are suffering from double digit unemployment and this is an agricultural area. I call for exercising extreme caution in making such very important decisions that will affect all of our futures. Can we afford to make uninformed policy decisions that can maim or even kill an industry and a way of life?

In most reviews by the RWQCB, salt is found to be limiting. Why was it decided to allow for only 50% volatilization of nitrogen? Is this based on good data? It makes a huge difference in the amount of land that a dairy is required to have.

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Extensive research has been conducted over the years on animal waste storage ponds to assess the risks involved and to establish standards and guidelines for their construction. Miller et al (1985)¹ conducted extensive field monitoring of an unlined, earthen storage pond that served to contain wastewater from a 4500 head beef feeding operation. Rowsell et al (1985)² followed up with a laboratory study to determine the degree and rate of sealing that had been observed. The liquid manure from the feedlot animals was centrifuged to remove a portion of the solids. The effluent from the centrifuge was pumped into the pond. Considerable dilution occurred in the pond due to runoff from the surrounding area. Miller et al considered this pond a severe test of the suitability of unlined earthen manure storage facilities because of the coarse nature of the soil material and the relatively dilute manure. The pond was observed to effectively seal within twelve weeks of addition of manure. It was concluded that the input from this pond had no effect on the downstream water quality and that it is very unlikely that NO₃-N contamination of groundwater would occur from such ponds while they are in use. Nitrification, required to convert ammonia to nitrate, only occurs in the presence of oxygen.

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Investigations of seal mechanisms demonstrate that physical clogging factors play a major role as long as soil interparticle void effective diameter is sufficiently small to retain all manure solids. (Barrington et al, 1983)³ The finer the diameter of the soil pores with respect to the manure solids, the more extensive the sealing process. Barrington et al. (1987 a, b)⁴ found little correlation between the soil's k value and the extent of the sealing process. The literature has established that the soil acts as a screen rather than a seal, accumulating at its surface an impermeable manure mat. Thus pore size and geometry become more important than k in determining the sealing outcome. Reduction in seepage by manure sealing was stated to be reliable provided that soils have a minimum clay content. Based on all of the above, Barrington and Broughton proposed the following guideline: If soil clay content exceeds 5 or 15%, for ruminant or monogastric animal manures, respectively, effective soil pore diameter values are respected whatever the soil porosity; no further soil testing is required and the reservoir can be constructed using compaction control sufficient for structural stability. (Barrington and Broughton, 1988)⁵

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Because nitrification, required to convert ammonia to nitrate, only occurs in the presence of oxygen, nitrate development within clay liners is probably limited. Miller et al (1985)

¹ Miller, M.H., Robinson, J.B., and R.W. Gillham. 1985. Self-sealing of earthen liquid manure storage ponds: I. A case study. *J. Environ. Qual.* 14:533-538.

² Rowsell, J.G., M.H. Miller, and P.H. Groenevelt. 1985. Self-sealing of earthen manure storage ponds: II. Rate and mechanism of sealing. *J. Environ. Qual.* 14:539-543.

³ Barrington, S.F., and P.J. Jutras. 1983. Soil sealing by manure in various soil types. ASAE Paper No. 83-4571.

⁴ Barrington, S.F., P.J. Jutras, and R.S. Broughton. 1987a. The sealing of soils by manure. Part I. Preliminary investigations. *Can. Agric. Eng.* 29(2):99-105.

Barrington, S.F., P.J. Jutras, and R.S. Broughton. 1987b. The sealing of soils by manure. Part II. Sealing mechanisms. *Can. Agric. Eng.* 29(2):105-109.

⁵ Barrington, S.F. and R.S. Broughton. 1988. Designing earthen storage facilities for manure. *Canadian Agricultural Engineering.* 30:289-292.

concluded that, with some limitations, unlined earthen manure ponds are environmentally acceptable, even in sandy material. Rowsell et al (1985) concurred, adding that the initial infiltration rate and the length of time required for the seal to develop will be greater for coarser-textured materials.

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I believe that the NRCS guidelines that are proposed in the element are conservative based on the research stated above. I don't believe that the dairy industry has been irresponsible in safeguarding water quality with the standards for dairy lagoons that we have had in the past. I would like to know what reference was alluded to on page 4.3-31 in making the statement, "Pollutants (nitrates and salts) have been documented to migrate through retention ponds and from corral areas at dairies in Merced and Stanislaus counties. I also question the statement on page 4.3-32 saying, "Significant infiltration of process water stored in pits and ponds may occur."

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It seems that much of the new regulations in this EIR are focused on air quality issues. That is not surprising since our area is in nonattainment for PM10 and ozone. I am concerned with the fact that the state regulatory agency in charge of air standards hasn't addressed these issues with respect to dairies yet. It seems logical to me that the state agency should address these issues before a county takes these issues on. Currently ag is exempt and I submit that the reason for that is because research hasn't defined the problem completely yet or been able to propose solutions. This is all well illustrated by the fact that the dairy element documentation wasn't able to cite PM10 emission factors for unpaved dairy corrals. The PM10 estimates for the four scenarios proffered vary by more than an order of magnitude. Can we really make policy on data like this?

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I have questions about the methane issue as well. Methane is not regulated and the greenhouse effect is still being disputed. Global warming is far from proven. Page 4.2-13 stated that dairy cattle represent only 2% of the total ruminant livestock methane generated and only 0.4% of the total anthropogenic methane generated in the US. Livestock manure decomposition producing methane accounts for only 7% of the total anthropogenic methane generated in the US. On page 4.2-77, it was stated that to date, a numerical significance criterion for the impact of increases in greenhouse gases has not been established. To sum things up as I see it, it appears that the livestock industry contributes a small proportion of the total methane and nobody is absolutely sure of the effects of methane as a greenhouse gas.

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Concerning reactive organic gases, it was stated that emission factors were developed more than ten years ago and are based on limited available data. It appears that anaerobic digesters are being touted as the primary advanced treatment measure to be considered. I question this because of the regulatory status of methane and the doubts on its effects. Also, won't an engine burning biogas emit reactive organic gases as well? It seems that ROG is a bigger problem than methane yet we seem to be advocating something that will get rid of methane but produce ROG.

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Concerning ammonia, it was stated that there are no federal or state standards but that it is a precursor to PM2.5; however, PM2.5 isn't well studied and specific PM2.5 rules are

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not in place either. The draft dairy element also pointed out that commercial fertilizers emit ammonia as well.

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Hydrogen sulfide seems to be mired in uncertainty as well. State standards exist but it is unclassified in attainment status. Also, emission factors are currently unavailable.

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Air mitigation measures will be required for dairies with over 735 cows. The following methods were outlined as possibilities: bio waste supplements, chemical additives, permeable and impermeable covers, natural crust covers, composting, aerobic treatment, and anaerobic digesters. The draft element discounted most of these measures immediately. Bio waste supplements were deemed questionable. Chemical additives don't address reduction of gases. Impermeable covers won't control gases. Natural crusting covers are forbidden by mosquito abatement districts. Composting still has ammonia, pretreatment, and equipment emissions and requires a large area. Aerobic treatment is energy intensive, requires significant maintenance, and the volatile solids removal efficiency is not established. Anaerobic digesters have exhaust emissions from equipment and burning biogas. They have never been considered practical in the past. One anaerobic digester was singled out as a success. (Haubenschild) Nevertheless, page 4.2-22 stated that standard testing methods for quantifying the reduction of air pollutants from treated manure (anaerobically or aerobically) is currently not readily available. How can we propose to make a major policy change with so few proven options and no data as to the outcome of these remedies?

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Concerning dust control, it seems that we are lead to believe that we should install sprinklers to suppress dust in corrals but no suggestions are made as to how we should do this without promoting mosquito and fly populations. "Specific measures" to control exhaust emissions from equipment were mentioned without saying what those specific measures were. Also suggestions were made to install temporary windbreaks at the windward side of construction areas. I am having a hard time imagining a practical way to do that. Finally, the element suggested removing manure frequently and in a manner that will minimize dust emissions while elsewhere stating the importance of not disturbing the manure seal in corrals.

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The comprehensive dairy water disposal plan (CDWDP) requires a signed agreement between a dairy operator and landowner, even if they are one and the same. Can't this be streamlined somehow? Similarly, does a wildlife habitat survey need to be done for every dairy that develops on land that has been actively farmed for decades?

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I am slightly confused by the statement about bringing existing dairies into voluntary conformance by 2006. If it is a voluntary program, how can it have a deadline?

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There will be a tremendous amount of recordkeeping done under these guidelines. Is it absolutely necessary to have to observe and log dust and odor conditions so frequently? Also, the livestock management plan requires a myriad of details to be logged down. I see no bearing on environmental impacts in many of the details requested. I am

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Mr. Bill Zumwalt

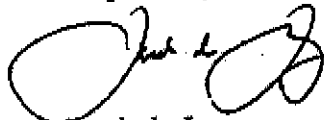
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concerned that so much time will be required for recordkeeping that I will not be able to manage my business as effectively as necessary to survive.

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Respectfully submitted,



Jacob de Jong

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