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Public policy drives herd sizes up and up

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the Central Valley (Sacramento and San Joaquin Valleys), and specifically within the San Joaquin Air District. The Central Valley Regional Water Quality Control Board

upon the information they received (in 2005), we should have markedly less particulate matter in the air.

Recently, a friend from another state asked what California's regulatory process was for dairy facilities. Well, that all depends on the particular county in which the dairy resides.

We have a host of regulatory requirements: County permitting agency, Air District, and Regional Water Quality Control Board. If the operator intends to compost manure and remove it from the facility then there's also the Integrated Waste Management Board. And most recently the Governor signed AB32, which is California's mandated greenhouse gas reduction. Let's look at the objectives of these various requirements and see how they affect herd size.

The existence of cows generating manure requires a discretionary land use permit, which requires a CEQA (California Environmental Quality Act) analysis for new or expanded facilities. The granting of the discretionary permit is a lengthy, resource-intensive public process. One of the agencies listed above serves as the lead agency (actual agency varies by County). A CEQA analysis evaluates potential impacts of activity on natural resources and includes, but is not limited to: daily trips (and equipment type) on roads, aesthetics, lighting, potential fire calls, water use/recharge, atmospheric emissions, and impact to habitat.

Most of California's dairy cows reside in



(RB5) is the water regulatory agency. The San Joaquin Air Pollution Control District (District) is the air agency.

If someone farms more than 100 contiguous acres or has more than 500 milking and dry cows, then the facility must comply with Rule 4550 to reduce particulate matter emissions (submissions due Dec. 2004; PM Rule). Producers who met the land or cow requirements completed Conservation Management Plans for particulate matter reduction and submitted them to the District. The District identified that, based

Beginning in July, 2004 dairies that emitted more than 12.5 tons of volatile organic compounds (VOC) per year were obligated to obtain a Permit to Operate. By definition, facilities with 1,000 milking cows were identified as large Confined Animal Facilities (large CAF) in 2006. Facilities meeting the large CAF definition residing in non-attainment areas for the one-hour ozone national ambient air quality standard are obligated to develop and implement a VOC emissions mitigation plan. Such plans must demonstrate reasonably available control technology in moderate and serious areas, and best available retrofit control technology in severe and extreme non-attainment area (the San Joaquin Valley Air District corresponding to Rule 4570).

If an operator has this permit to operate, any change in any of the permitting units at the facility (including remodeling the milking parlor, installation of shade structures for cows in corrals, etc.) that increases VOC emissions above the threshold requires submission of an authority to construct application. The application is reviewed and the applicant may be required to implement Best Available Control Technologies to minimize their emissions. A detailed CEQA analysis may or may not be required.

Rule 4570 was put into place to reduce ozone concentration in the air (we exceed the National Ambient Air Quality Standards for ozone). VOCs are a precursor to ozone. It remains to be seen if reducing rel-

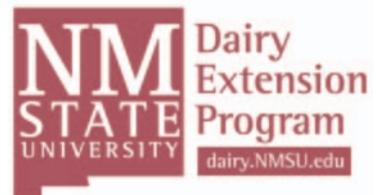
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actively non-reactive gases will impact air quality or not, since it takes a few years to identify if there is an improvement in air quality.

In May, 2007 RB5 adopted "General Order Waste Discharge Requirements for Existing Milk Cow Dairies". For facilities to remain eligible for coverage under this General Order they must not increase cow numbers above 15 percent of the reported cow numbers (milking and dry) from October 2005. Basically, the October 2005 reported herd size serves as a facility cap and remains with the facility, **not** the herd. To increase herd size beyond this value requires seeking an Individual Waste Discharge Requirement. This requires compliance with the California Environmental Quality Act (CEQA).

The intent of this General Order is to protect surface and ground waters. It's a one size fits all (pasture, rented, leased, build in 2005 or 1925, etc.). California has an anti-degradation law that was put in place in 1968 to protect surface waters; it's now being applied to our groundwater.

Agriculture in the U.S. would come to a screeching halt if everyone were held to a zero impact to groundwater standard. As a result, the General Order has requirements for sizing lagoons (1.5 times rain runoff, and sufficient storage to apply nutrients to meet crop needs and not for water delivery), as well as lagoon construction design criteria (double lined leachate collection system). Under this General Order this is no inexpensive way to increase liquid manure storage capacity. Costs of installing a liquid storage structure just went up by the hundred of thousands of dollars due to the liner requirements.

Much recordkeeping required . . .

A key useful component of the General Order to protect groundwater quality is that it has mandated requirements for maximum application of total nitrogen to land. This should result in decreased fertilizer inputs and crop production costs. There is also a significant recordkeeping requirement so operators can document actual application quantities of manure on a field-by-field basis. However, the cost to operators is significant; industry reports estimate \$15,000 to \$40,000 per year. Can a 100- or 300-cow herd afford these increased costs?

Compliance with CEQA is quite a challenge. It takes a lawyer. It's a public process. It's a lengthy process. The rules may change midstream. An example is an operator who went through the County permitting process to expand his facility. Almost at the end of the process the State Attorney General sent notification to the County that it did not sufficiently address greenhouse gas emissions.

Mind you, the producer did their CEQA documentation based upon the requirements when he began. During the process AB32 (greenhouse gas reduction) was

** The average value for all operations; a single value for each operation is summed over all operations reporting divided by the number of operations reporting.*

passed. Now the Attorney General may be holding the facility responsible for addressing new regulatory processes as well. This one will take a little effort from the lawyers to determine the fate of the initial CEQA document.

The General Order is a five-year implementation process to address nutrient management. It restricts application of manure to not exceed 1.4 times crop nutrient uptake and requires that everything applied to and removed from land application areas be quantified (amount and nutrient content). This includes 14 pounds per acre of atmospheric deposition of nitrogen. The Monitoring and Reporting program establishes the minimum sampling requirements to be compliant with the regulations. All facilities covered under the General Order must comply with the sampling and reporting requirements, whether they have 50 cows or 10,000 cows.

Actual producer stories . . .

Here are a few examples of real environmental regulation stories in California:

- One very young producer was just beginning his dairy herd in spring 2005 at a leased facility. The number of cows he had in October 2005 wasn't his build-out herd size; in 2005 he had around 200 cows and in 2007/2008 he had 300 cows. This was a startup herd. Unfortunately, since the cows weren't on the facility in October 2005 the producer has limited options.

Option 1: Figure out how many cows the previous lessee had at the dairy and potentially modify the existing herd conditions with the Regional Water Quality Control Board.

Option 2: Seek coverage under individual waste discharge requirements.

Option 3: Find another dairy to lease that had more cows in October 2005.

Option 1 is unlikely to occur since the previous renter and the landlord didn't part on good circumstances. Option 2 is **very** expensive – probably two years and more than \$200,000. So, the operator really only has Option 3.

"Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" spells out the minimum sampling requirements for soils. If an operator has 400 acres or less of cropland where manure may be applied (covered under the General Order) then the operator should collect composite samples to represent every 40 acres. If the operator has over 400 acres then composites are to represent 80 acres. So, an operator with 360 acres will be sending in nine samples and an operator with 480 acres will send in six samples.

- Another operator has a grazing facility with 150 cows. The estimated costs for the Monitoring and Reporting requirements are between \$15,000 and 40,000 per year, depending on how many of the samples and how much of the record keeping the operator does themselves, versus paying someone else to do it. If the operator's family invests

the labor to do the sampling and record keeping, this resource (time) is diverted from other management activities and family responsibilities.

If a facility needs to spend an additional \$30,000 per year on compliance, how many extra cows would be needed in the herd to cover those costs? If those additional cows are more than 15 percent above the reported herd size in 2005, then add another \$80,000 to over \$250,000 for compliance with CEQA.

How do dairies fit into greenhouse gas reductions (AB32)? That one is still playing out. Certainly, there's opportunity to capture methane and make electricity. However, if that's going to happen with a liquid system it will probably mean installation of a new lagoon so there continues to be sufficient storage capacity (see stumbling block above about the double-lined leachate collection system). If making electricity on farm is with a generator, odds are pretty good that the clean burn generator (emits less than 9 ppm NO_x) that's needed doesn't exist yet. For a few fortunate folks, they will live along a gas distribution line and can sell biogas instead of electricity.

Yolo County is currently proposing that private land owners install water meters to monitor use of groundwater. Amid the ever-changing landscape of California's water resources this proposal has had tremendous objection. Yet, in the southern part of the state, the use of meters to quantify amount of groundwater used is just another part of doing business for all water users.

The cost of compliance with environmental regulations in the Central Valley is high – both in time and money. As the population continues to grow there will be increased stressors on our environment and additional regulations. Some of the concerned citizen groups would prefer that the California dairy landscape consist of smaller herds than is currently the case. Yet, it is the expense of environmental regulations that is making it almost impossible for smaller facilities to survive. It was 16 years ago that the evening news closed with "as California goes, so goes the nation."

Agriculture in the U.S. would come to a screeching halt if everyone were held to a zero impact to groundwater standard.

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